



## SEQUENCE LISTING

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Jay, Haron J.

<120> STABILIZED IMMUNOGENIC HBc CHIMER PARTICLES

<130> ICC-136.0 (4564-88881)

<140> US 10/732,862  
<141> 2003-12-10

<150> US 60/432,123  
<151> 2002-12-10

<150> US 10/274,616  
<151> 2002-10-21

<150> US 10/080,299  
<151> 2002-02-21

<150> US 10/082,014  
<151> 2002-02-22

<160> 455

<170> PatentIn version 3.2

<210> 1  
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<213> Hepatitis B virus

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Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu  
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Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp  
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys  
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu  
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp Pro Ala  
65 70 75 80

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys  
85 90 95

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg  
100 105 110

Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr  
115 120 125



Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro  
 130 135 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr  
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Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser  
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Gln Ser Arg Glu Ser Gln Cys  
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 <213> Hepatitis B virus

<400> 2

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu  
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Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp  
 20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys  
 35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu  
 50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Asn Asn Leu Gln Asp Pro Ala  
 65 70 75 80

Ser Arg Asp Leu Val Val Asn Tyr Val Asn Thr Asn Met Gly Leu Lys  
 85 90 95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg  
 100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr  
 115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro  
 130 135 140

Glu Thr Thr Val Val Arg Arg Arg Asp Arg Gly Arg Ser Pro Arg Arg  
 145 150 155 160

Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg



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Arg Ser Gln Ser Arg Glu Ser Gln Cys					
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Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp					
	20		25		30
Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys					
	35		40		45
Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu					
	50		55		60
Leu Met Thr Leu Ala Thr Trp Val Gly Asn Asn Leu Glu Asp Pro Ala					
65		70		75	80
Ser Arg Asp Leu Val Val Asn Tyr Val Asn Thr Asn Val Gly Leu Lys					
	85		90		95
Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg					
	100		105		110
Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr					
	115		120		125
Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro					
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Glu Thr Thr Val Val Arg Arg Arg Asp Arg Gly Arg Ser Pro Arg Arg					
145		150		155	160
Arg Thr Pro Ser Pro Arg Arg Arg Pro Ser Gln Ser Pro Arg Arg Arg					
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Arg Ser Gln Ser Arg Glu Ser Gln Cys					
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Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp  
20 25 30

Thr Ala Ala Ala Leu Tyr Arg Asp Ala Leu Glu Ser Pro Glu His Cys  
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Asp  
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Thr Asn Leu Glu Asp Pro Ala  
65 70 75 80

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Val Gly Leu Lys  
85 90 95

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg  
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr  
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro  
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr  
145 150 155 160

Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser  
165 170 175

Gln Ser Arg Glu Ser Gln Cys  
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<210> 5

<211> 183

<212> PRT

<213> woodchuck

<400> 5

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu  
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Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp  
20 25 30



Thr Ala Thr Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys  
 35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Asp Glu  
 50 55 60

Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn Ile Thr Ser Glu Gln  
 65 70 75 80

Val Arg Thr Ile Ile Val Asn His Val Asn Asp Thr Trp Gly Leu Lys  
 85 90 95

Val Arg Gln Ser Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln  
 100 105 110

His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr  
 115 120 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro  
 130 135 140

Glu His Thr Val Ile Arg Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser  
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Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro  
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Arg Arg Arg Arg Ser Gln Cys  
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<210> 6  
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 <213> ground squirrel

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Thr Val Gln Ala Ser Lys Leu Cys Leu Gly Trp Leu Trp Asp Met Asp  
 20 25 30

Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu Asn Phe  
 35 40 45

Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp Thr Ala  
 50 55 60

Ala Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys Ser Pro  
 65 70 75 80



His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Glu Glu Leu Thr  
85 90 95

Arg Leu Ile Thr Trp Met Ser Glu Asn Thr Thr Glu Glu Val Arg Arg  
100 105 110

Ile Ile Val Asp His Val Asn Asn Thr Trp Gly Leu Lys Val Arg Gln  
115 120 125

Thr Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gly His Thr Val  
130 135 140

Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro Ala Pro  
145 150 155 160

Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu His Thr  
165 170 175

Val Ile Arg Arg Arg Gly Gly Ser Arg Ala Ala Arg Ser Pro Arg Arg  
180 185 190

Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg  
195 200 205

Arg Ser Gln Ser Pro Ala Ser Asn Cys  
210 215

<210> 7  
<211> 51  
<212> DNA  
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<223> modified plasmid pkk223

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51

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<213> Artificial sequence

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<223> malarial B cell epitope

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Ile Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn  
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Pro Glu Leu

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<211> 21

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<213> Artificial sequence

<220>

<223> Chimera of malarial T cell epitope and hepatitis B

<400> 10

Ile Glu Tyr Leu Asn Lys Ile Gln Asn Ser Leu Ser Thr Glu Trp Ser  
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Pro Cys Ser Val Thr  
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<210> 11

<211> 15

<212> PRT

<213> Streptococcus pneumoniae

<400> 11

Lys Leu Glu Glu Leu Ser Asp Lys Ile Asp Glu Leu Asp Ala Glu  
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<210> 12

<211> 35

<212> PRT

<213> Streptococcus pneumoniae

<400> 12

Gln Lys Lys Tyr Asp Glu Asp Gln Lys Lys Thr Glu Glu Lys Ala Ala  
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Leu Glu Lys Ala Ala Ser Glu Glu Met Asp Lys Ala Val Ala Ala Val  
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Gln Gln Ala  
35

<210> 13

<211> 27

<212> PRT



<213> Cryptosporidium parvum

<400> 13

Gln Asp Lys Pro Ala Asp Ala Pro Ala Ala Glu Ala Pro Ala Ala Glu  
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Pro Ala Ala Gln Gln Asp Lys Pro Ala Asp Ala  
20 25

<210> 14

<211> 17

<212> PRT

<213> Human immunodeficiency virus

<400> 14

Arg Lys Arg Ile His Ile Gly Pro Gly Arg Ala Phe Tyr Ile Thr Lys  
1 5 10 15

Asn

<210> 15

<211> 31

<212> PRT

<213> Foot-and-mouth disease virus

<400> 15

Tyr Asn Gly Glu Cys Arg Tyr Asn Arg Asn Ala Val Pro Asn Leu Arg  
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Gly Asp Leu Gln Val Leu Ala Gln Lys Val Ala Arg Thr Leu Pro  
20 25 30

<210> 16

<211> 10

<212> PRT

<213> Influenza A virus

<400> 16

Tyr Arg Asn Leu Leu Trp Leu Thr Glu Lys  
1 5 10

<210> 17

<211> 23

<212> PRT

<213> Influenza A virus

<400> 17

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys  
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Arg Cys Asn Gly Ser Ser Asp  
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<210> 18  
 <211> 23  
 <212> PRT  
 <213> Influenza A virus

<400> 18

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys  
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Arg Cys Asn Asp Ser Ser Asp  
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<210> 19  
 <211> 23  
 <212> PRT  
 <213> Influenza A virus

<400> 19

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ala  
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Arg Ala Asn Asp Ser Ser Asp  
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<210> 20  
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Glu Gln Gln Ser Ala Val Asp Ala Asp Asp Ser His Phe Val Ser Ile  
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Glu Leu Glu

<210> 21  
 <211> 23  
 <212> PRT  
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<400> 21

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser  
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Arg Ser Asn Asp Ser Ser Asp  
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<210> 22  
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<400> 22

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser  
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Arg Cys Asn Asp Ser Ser Asp  
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<210> 23

<211> 23

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<213> Influenza A virus

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Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys  
1 5 10 15

Arg Ser Asn Asp Ser Ser Asp  
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<210> 24

<211> 23

<212> PRT

<213> Influenza A virus

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Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys  
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Arg Ala Asn Asp Ser Ser Asp  
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<210> 25

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<212> PRT

<213> Influenza A virus

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Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ala  
1 5 10 15

Arg Cys Asn Asp Ser Ser Asp  
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<210> 26

<211> 24

<212> PRT

<213> Influenza A virus

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Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
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Cys Arg Cys Asn Asp Ser Ser Asp  
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<210> 27  
<211> 24  
<212> PRT  
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<400> 27

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
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Ser Arg Ser Asn Asp Ser Ser Asp  
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<210> 28  
<211> 35  
<212> PRT  
<213> Influenza A virus

<400> 28

Met Gly Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu  
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Trp Gly Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu Leu Gly Trp Leu  
20 25 30

Trp Gly Ile  
35

<210> 29  
<211> 24  
<212> PRT  
<213> Influenza A virus

<400> 29

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
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Ala Arg Ala Asn Asp Ser Ser Asp  
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<210> 30  
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<212> PRT  
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<400> 30

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
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Cys Arg Ala Asn Asp Ser Ser Asp



20

<210> 31  
<211> 24  
<212> PRT  
<213> Influenza A virus

<400> 31

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
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Ala Arg Cys Asn Asp Ser Ser Asp  
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<210> 32  
<211> 24  
<212> PRT  
<213> Influenza A virus

<400> 32

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
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Cys Arg Ser Asn Asp Ser Ser Asp  
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<210> 33  
<211> 24  
<212> PRT  
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<400> 33

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
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Ser Arg Cys Asn Asp Ser Ser Asp  
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<210> 34  
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<212> PRT  
<213> Influenza A virus

<400> 34

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser  
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Arg Ser Asn Asp Ser Ser Asp Ser Leu Leu Thr Glu Val Glu Thr Pro  
20 25 30

Ile Arg Asn Glu Trp Gly Ser Arg Ser Asn Asp Ser Ser Asp  
35 40 45



<210> 35  
 <211> 69  
 <212> PRT  
 <213> Influenza A virus

<400> 35

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser  
 1 5 10 15

Arg Ser Asn Asp Ser Ser Asp Ser Leu Leu Thr Glu Val Glu Thr Pro  
 20 25 30

Ile Arg Asn Glu Trp Gly Ser Arg Ser Asn Asp Ser Ser Asp Ser Leu  
 35 40 45

Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser Arg Ser  
 50 55 60

Asn Asp Ser Ser Asp  
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<210> 36  
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 <212> PRT  
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<400> 36

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ala  
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Arg Ala Asn Asp Ser Ser Asp Ser Leu Leu Thr Glu Val Glu Thr Pro  
 20 25 30

Ile Arg Asn Glu Trp Gly Ala Arg Ala Asn Asp Ser Ser Asp  
 35 40 45

<210> 37  
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<400> 37

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ala  
 1 5 10 15

Arg Ala Asn Asp Ser Ser Asp Ser Leu Leu Thr Glu Val Glu Thr Pro  
 20 25 30

Ile Arg Asn Glu Trp Gly Ala Arg Ala Asn Asp Ser Ser Asp Ser Leu  
 35 40 45



Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ala Arg Ala  
 50 55 60

Asn Asp Ser Ser Asp  
 65

<210> 38  
 <211> 19  
 <212> PRT  
 <213> Influenza A virus

<400> 38

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 1 5 10 15

Ser Ser Asp

<210> 39  
 <211> 38  
 <212> PRT  
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<400> 39

Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser Arg Cys Asn Asp  
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Ser Ser Asp Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser Arg  
 20 25 30

Cys Asn Asp Ser Ser Asp  
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 <211> 57  
 <212> PRT  
 <213> Influenza A virus

<400> 40

Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser Arg Cys Asn Asp  
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Ser Ser Asp Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser Arg  
 20 25 30

Cys Asn Asp Ser Ser Asp Glu Val Glu Thr Pro Ile Arg Asn Glu Trp  
 35 40 45

Gly Ser Arg Cys Asn Asp Ser Ser Asp  
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<210> 41



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<211> 23
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<213> Influenza A virus

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<223> Xaa at position 1 is methionine or absent. If methionine then
Xaa in positions 2 through 8 are not absent

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa at position 2 is serine or absent. If serine then Xaa in
positions 3 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa at position 3 is leucine or absent. If leucine then Xaa
in
positions 4 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa at position 4 is leucine or absent. If leucine then Xaa
in
positions 5 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa at position 5 is threonine or absent. If threonine than
Xaa
in positions 6 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa at position 6 is glutamic acid or absent. If glutamic
acid
then Xaa in positions 7 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa at position 7 is valine or absent. If valine then Xaa in
position 8 is not absent.

<220>
<221> misc_feature
<222> (8)..(8)
<223> Xaa can be any naturally occurring amino acid

<220>
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<222> (15)..(15)
<223> Xaa at position 15 is tryptophan or absent.

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa at position 16 is glycine or absent. If glycine then Xaa
in

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position 15 is not absent.

<220>  
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 <222> (17)..(17)  
 <223> Xaa at position 17 is absent or present, if present Xaa in  
 position 17 is cysteine, serine or alanine. If Xaa in  
 position 17 is present then positions 15 through 16 are not absent.

<220>  
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 <222> (18)..(18)  
 <223> Xaa at position 18 is arginine or absent. If arginine then  
 Xaa in positions 15 through 17 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (19)..(19)  
 <223> Xaa at position 19 is absent or present, if present Xaa in  
 position 19 is cysteine, serine or alanine. If Xaa in  
 position 19 is present then positions 15 through 18 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (20)..(20)  
 <223> Xaa at position 20 is asparagine or absent. If asparagine  
 then Xaa in positions 15 through 19 are not absent.

<220>  
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 <222> (21)..(21)  
 <223> Xaa at position 21 is aspartic acid or absent. If aspartic  
 acid then Xaa in positions 15 through 20 are not absent.

<220>  
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 <222> (22)..(22)  
 <223> Xaa at position 22 is serine or absent. If serine then Xaa in  
 positions 15 through 21 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (23)..(23)  
 <223> Xaa at position 23 is serine or absent. If serine then Xaa in  
 positions 15 through 22 are not absent.

<400> 41

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr Pro Ile Arg Asn Glu Xaa Xaa  
 1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20

<210> 42  
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 <212> PRT  
 <213> Influenza A virus



<220>  
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 <223> Xaa at position 1 is methionine or absent. If methionine then  
 Xaa in positions 2 through 8 are not absent

<220>  
 <221> MISC\_FEATURE  
 <222> (2)..(2)  
 <223> Xaa at position 2 is serine or absent. If serine then Xaa in  
 positions 3 through 8 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (3)..(3)  
 <223> Xaa at position 3 is leucine or absent. If leucine then Xaa  
 in  
 positions 4 through 8 are not absent.

<220>  
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 in  
 positions 5 through 8 are not absent.

<220>  
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 <222> (5)..(5)  
 <223> Xaa at position 5 is threonine or absent. If threonine than  
 Xaa  
 in positions 6 through 8 are not absent.

<220>  
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 <222> (6)..(6)  
 <223> Xaa at position 6 is glutamic acid or absent. If glutamic  
 acid  
 then Xaa in positions 7 through 8 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (7)..(7)  
 <223> Xaa at position 7 is valine or absent. If valine then Xaa in  
 position 8 is not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (8)..(8)  
 <223> Xaa at position 8 is glutamic acid or absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (15)..(15)  
 <223> Xaa at position 15 is tryptophan or absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (16)..(16)  
 <223> Xaa at position 16 is glycine or absent. If glycine then Xaa  
 in  
 position 15 is not absent.

<220>  
 <221> MISC\_FEATURE



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<222> (17)..(17)
<223> Xaa at position 17 is absent or present, if present Xaa in
position 17 is cysteine, serine or alanine. If Xaa in
position 17 is present then positions 15 through 16 are not absent.

<220>
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<223> Xaa at position 18 is arginine or absent. If arginine then
Xaa in positions 15 through 17 are not absent.

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa at position 19 is absent or present, if present Xaa in
position 19 is cysteine, serine or alanine. If Xaa in
position 19 is present then positions 15 through 18 are not absent.

<220>
<221> MISC_FEATURE
<222> (20)..(20)
<223> Xaa at position 20 is asparagine or absent. If asparagine
then Xaa in positions 15 through 19 are not absent.

<220>
<221> MISC_FEATURE
<222> (21)..(21)
<223> Xaa at position 21 is aspartic acid or absent. If aspartic
acid then Xaa in positions 15 through 20 are not absent.

<220>
<221> MISC_FEATURE
<222> (22)..(22)
<223> Xaa at position 22 is serine or absent. If serine then Xaa in
positions 15 through 21 are not absent.

<220>
<221> MISC_FEATURE
<222> (23)..(23)
<223> Xaa at position 23 is serine or absent. If serine then Xaa in
positions 15 through 22 are not absent.

<220>
<221> MISC_FEATURE
<222> (24)..(24)
<223> Xaa at position 24 is aspartic acid or absent. If aspartic
acid then Xaa in positions 15 through 23 are not absent.

<220>
<221> MISC_FEATURE
<222> (25)..(25)
<223> Xaa at position 25 is serine or absent. If serine then Xaa in
positions 26 through 31 are not absent

<220>
<221> MISC_FEATURE
<222> (26)..(26)
<223> Xaa at position 26 is leucine or absent. If serine then Xaa
in positions 27 through 31 are not absent

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<220>  
 <221> MISC\_FEATURE  
 <222> (27)..(27)  
 <223> Xaa at position 27 is leucine or absent. If leucine then Xaa  
 in  
 positions 28 through 31 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (28)..(28)  
 <223> Xaa at position 28 is threonine or absent. If threonine than  
 Xaa  
 in positions 29 through 31 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (29)..(29)  
 <223> Xaa at position 29 is glutamic acid or absent. If glutamic  
 acid  
 then Xaa in positions 30 through 31 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (30)..(30)  
 <223> Xaa at position 30 is valine or absent. If valine then Xaa in  
 position 31 is not absent.

<220>  
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 <222> (31)..(31)  
 <223> Xaa at position 31 is glutamic acid or absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (38)..(38)  
 <223> Xaa at position 38 is tryptophan or absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (39)..(39)  
 <223> Xaa at position 39 is glycine or absent. If glycine then Xaa  
 in  
 position 38 is not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (40)..(40)  
 <223> Xaa at position 40 is absent or present, if present Xaa in  
 position 40 is cysteine, serine or alanine. If Xaa in  
 position  
 40 is present then positions 38 through 39 are not absent.

<220>  
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 <222> (41)..(41)  
 <223> Xaa at position 41 is arginine or absent. If arginine then  
 Xaa  
 in positions 38 through 40 are not absent

<220>  
 <221> MISC\_FEATURE  
 <222> (42)..(42)  
 <223> Xaa at position 42 is absent or present, if present Xaa in  
 position 42 is cysteine, serine or alanine. If Xaa in  
 position



42 is present then positions 38 through 41 are not absent.

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<220>
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<222> (43)..(43)
<223> Xaa at position 43 is asparagine or absent. If asparagine
then
      Xaa in positions 38 through 42 are not absent.

<220>
<221> MISC_FEATURE
<222> (44)..(44)
<223> Xaa at position 44 is aspartic acid or absent. If aspartic
acid
      then Xaa in positions 38 through 43 are not absent.

<220>
<221> misc_feature
<222> (45)..(45)
<223> Xaa can be any naturally occurring amino acid

<220>
<221> MISC_FEATURE
<222> (46)..(46)
<223> Xaa at position 46 is serine or absent. If serine then Xaa in
positions 38 through 45 are not absent.

<220>
<221> MISC_FEATURE
<222> (47)..(47)
<223> Xaa at position 47 is aspartic acid or absent. If aspartic
acid
      then Xaa in positions 38 through 46 are not absent.

<400> 42

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr Pro Ile Arg Asn Glu Xaa Xaa
1          5          10          15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr
20          25          30

Pro Ile Arg Asn Glu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
35          40          45

<210> 43
<211> 70
<212> PRT
<213> Influenza A virus

<220>
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<223> Xaa at position 1 is methionine or absent. If methionine then
Xaa in positions 2 through 8 are not absent

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa at position 2 is serine or absent. If serine then Xaa in
positions 3 through 8 are not absent.

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<220>  
 <221> MISC\_FEATURE  
 <222> (3)..(3)  
 <223> Xaa at position 3 is leucine or absent. If leucine then Xaa  
 in  
 positions 4 through 8 are not absent.

<220>  
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 <222> (4)..(4)  
 <223> Xaa at position 4 is leucine or absent. If leucine then Xaa  
 in  
 positions 5 through 8 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (5)..(5)  
 <223> Xaa at position 5 is threonine or absent. If threonine than  
 Xaa  
 in positions 6 through 8 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (6)..(6)  
 <223> Xaa at position 6 is glutamic acid or absent. If glutamic  
 acid  
 then Xaa in positions 7 through 8 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (7)..(7)  
 <223> Xaa at position 7 is valine or absent. If valine then Xaa in  
 position 8 is not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (8)..(8)  
 <223> Xaa at position 8 is glutamic acid or absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (15)..(15)  
 <223> Xaa at position 15 is tryptophan or absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (16)..(16)  
 <223> Xaa at position 16 is glycine or absent. If glycine then Xaa  
 in  
 position 15 is not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (17)..(17)  
 <223> Xaa at position 17 is absent or present, if present Xaa in  
 position 17 is cysteine, serine or alanine. If Xaa in  
 position  
 17 is present then positions 15 through 16 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (18)..(18)  
 <223> Xaa at position 18 is arginine or absent. If arginine then  
 Xaa  
 in positions 15 through 17 are not absent.



<220>  
 <221> MISC\_FEATURE  
 <222> (19)..(19)  
 <223> Xaa at position 19 is absent or present, if present Xaa in  
 position 19 is cysteine, serine or alanine. If Xaa in  
 position 19 is present then positions 15 through 18 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (20)..(20)  
 <223> Xaa at position 20 is asparagine or absent. If asparagine  
 then  
 Xaa in positions 15 through 19 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (21)..(21)  
 <223> Xaa at position 21 is aspartic acid or absent. If aspartic  
 acid  
 then Xaa in positions 15 through 20 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (22)..(22)  
 <223> Xaa at position 22 is serine or absent. If serine then Xaa in  
 positions 15 through 21 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (23)..(23)  
 <223> Xaa at position 23 is serine or absent. If serine then Xaa in  
 positions 15 through 22 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (24)..(24)  
 <223> Xaa at position 24 is aspartic acid or absent. If aspartic  
 acid  
 then Xaa in positions 15 through 23 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (25)..(25)  
 <223> Xaa at position 25 is serine or absent. If serine then Xaa in  
 positions 26 through 31 are not absent

<220>  
 <221> MISC\_FEATURE  
 <222> (26)..(26)  
 <223> Xaa at position 26 is leucine or absent. If leucine then Xaa  
 in  
 positions 27 through 31 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (27)..(27)  
 <223> Xaa at position 27 is leucine or absent. If leucine then Xaa  
 in  
 positions 28 through 31 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (28)..(28)  
 <223> Xaa at position 28 is threonine or absent. If threonine than  
 Xaa



in positions 29 through 31 are not absent.

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<220>
<221> MISC_FEATURE
<222> (29)..(29)
<223> Xaa at position 29 is glutamic acid or absent. If glutamic
acid
      then Xaa in positions 30 through 31 are not absent.

<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> Xaa at position 30 is valine or absent. If valine then Xaa in
      position 31 is not absent.

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> Xaa at position 31 is glutamic acid or absent.

<220>
<221> MISC_FEATURE
<222> (38)..(38)
<223> Xaa at position 38 is tryptophan or absent.

<220>
<221> MISC_FEATURE
<222> (39)..(39)
<223> Xaa at position 39 is glycine or absent. If glycine then Xaa
in
      position 38 is not absent.

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> Xaa at position 40 is absent or present, if present Xaa in
position
      position 40 is cysteine, serine or alanine. If Xaa in
      position 40 is present then positions 38 through 39 are not absent.

<220>
<221> MISC_FEATURE
<222> (41)..(41)
<223> Xaa at position 41 is arginine or absent. If arginine then
Xaa
      in positions 38 through 40 are not absent.

<220>
<221> MISC_FEATURE
<222> (42)..(42)
<223> Xaa at position 42 is absent or present, if present Xaa in
position
      position 42 is cysteine, serine or alanine. If Xaa in
      position 42 is present then positions 38 through 41 are not absent.

<220>
<221> MISC_FEATURE
<222> (43)..(43)
<223> Xaa at position 43 is asparagine or absent. If asparagine
then
      Xaa in positions 38 through 42 are not absent.

<220>
<221> MISC_FEATURE
<222> (44)..(44)

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<223> Xaa at position 44 is aspartic acid or absent. If aspartic acid then Xaa in positions 38 through 43 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (45)..(45)  
 <223> Xaa at position 45 is serine or absent. If serine then Xaa in positions 38 through 44 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (46)..(46)  
 <223> Xaa at position 46 is serine or absent. If serine then Xaa in positions 38 through 45 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (47)..(47)  
 <223> Xaa at position 47 is aspartic acid or absent. If aspartic acid then Xaa in positions 38 through 46 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (48)..(48)  
 <223> Xaa at position 48 is serine or absent. If serine then Xaa in positions 49 through 54 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (49)..(49)  
 <223> Xaa at position 49 is leucine or absent. If leucine then Xaa in positions 50 through 54 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (50)..(50)  
 <223> Xaa at position 50 is leucine or absent. If leucine then Xaa in positions 51 through 54 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (51)..(51)  
 <223> Xaa at position 51 is threonine or absent. If threonine than Xaa in positions 52 through 54 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (52)..(52)  
 <223> Xaa at position 52 is glutamic acid or absent. If glutamic acid then Xaa in positions 53 through 54 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (53)..(53)  
 <223> Xaa at position 53 is valine or absent. If valine then Xaa in position 54 is not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (54)..(54)



<223> Xaa at position 54 is glutamic acid or absent

<220>  
 <221> MISC\_FEATURE  
 <222> (61)..(61)  
 <223> Xaa at position 61 is tryptophan or absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (62)..(62)  
 <223> Xaa at position 62 is glycine or absent. If glycine then Xaa  
 in  
 position 61 is not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (63)..(63)  
 <223> Xaa at position 63 is absent or present, if present Xaa in  
 position 63 is cysteine, serine or alanine. If Xaa in  
 position  
 63 is present then positions 61 through 62 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (64)..(64)  
 <223> Xaa at position 64 is arginine or absent. If arginine then  
 Xaa  
 in positions 61 through 63 are not absent

<220>  
 <221> MISC\_FEATURE  
 <222> (65)..(65)  
 <223> Xaa at position 65 is absent or present, if present Xaa in  
 position 65 is cysteine, serine or alanine. If Xaa in  
 position  
 65 is present then positions 61 through 64 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (66)..(66)  
 <223> Xaa at position 66 is asparagine or absent. If asparagine  
 then  
 Xaa in positions 61 through 65 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (67)..(67)  
 <223> Xaa at position 67 is aspartic acid or absent. If aspartic  
 acid  
 then Xaa in positions 61 through 66 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (68)..(68)  
 <223> Xaa at position 68 is serine or absent. If serine then Xaa in  
 positions 61 through 67 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (69)..(69)  
 <223> Xaa at position 69 is serine or absent. If serine then Xaa in  
 positions 61 through 68 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (70)..(70)



<223> Xaa at position 70 is aspartic acid or absent. If aspartic acid then Xaa in positions 61 through 69 are not absent.

<400> 43

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr Pro Ile Arg Asn Glu Xaa Xaa  
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr  
20 25 30

Pro Ile Arg Asn Glu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
35 40 45

Xaa Xaa Xaa Xaa Xaa Xaa Thr Pro Ile Arg Asn Glu Xaa Xaa Xaa Xaa  
50 55 60

Xaa Xaa Xaa Xaa Xaa Xaa  
65 70

<210> 44  
<211> 24  
<212> PRT  
<213> Influenza A virus

<220>  
<221> MISC\_FEATURE  
<222> (1)..(1)  
<223> Xaa at position 1 is methionine or absent. If methionine then Xaa in position 2 through 8 are not absent.

<220>  
<221> MISC\_FEATURE  
<222> (2)..(2)  
<223> Xaa at position 2 is serine or absent. If serine then Xaa in position 3 through 8 are not absent.

<220>  
<221> MISC\_FEATURE  
<222> (3)..(3)  
<223> Xaa at position 3 is leucine or absent. If leucine then Xaa in position 4 through 8 are not absent.

<220>  
<221> MISC\_FEATURE  
<222> (4)..(4)  
<223> Xaa at position 4 is leucine or absent. If leucine then Xaa in position 5 through 8 are not absent.

<220>  
<221> MISC\_FEATURE  
<222> (5)..(5)  
<223> Xaa at position 4 is threonine or proline or absent. If threonine or proline then Xaa in position 6 through 8 are not absent.

<220>



<221> MISC\_FEATURE  
 <222> (6)..(6)  
 <223> Xaa at position 6 is glutamic acid or absent. If glutamic acid  
 then Xaa in position 7 through 8 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (7)..(7)  
 <223> Xaa at position 7 is valine or absent. If valine then Xaa in  
 position 8 is not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (8)..(8)  
 <223> Xaa at position 8 is glutamic acid or aspartic acid or absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (10)..(10)  
 <223> Xaa at position 10 is proline, leucine or histidine.

<220>  
 <221> MISC\_FEATURE  
 <222> (11)..(11)  
 <223> Xaa at position 11 is isoleucine or threonine.

<220>  
 <221> MISC\_FEATURE  
 <222> (13)..(13)  
 <223> Xaa at position 13 is asparagine or serine.

<220>  
 <221> MISC\_FEATURE  
 <222> (14)..(14)  
 <223> Xaa at position 14 is glutamic acid or glycine.

<220>  
 <221> MISC\_FEATURE  
 <222> (15)..(15)  
 <223> Xaa at position 15 is tryptophan or absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (16)..(16)  
 <223> Xaa at position 16 is glycine, glutamic acid or absent. If  
 glycine or glutamic acid then Xaa in position 16 is not  
 absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (17)..(17)  
 <223> Xaa at position 17 is absent or present, if present Xaa in  
 position 17 is cysteine, serine or alanine. If Xaa in  
 position  
 17 is present then positions 15 through 16 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (18)..(18)  
 <223> Xaa at position 18 arginine, lysine or absent. If arginine or  
 lysine then Xaa in positions 15 through 17 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (19)..(19)



<223> Xaa at position 19 is absent or present, if present Xaa in position 19 is cysteine, serine or alanine. If Xaa is position 19 is present then positions 15 through 18 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (20)..(20)  
 <223> Xaa at position 20 is asparagine, serine, glycine or absent. If asparagine or serine or glycine then Xaa is positions 15 through 19 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (21)..(21)  
 <223> Xaa at position 21 is aspartic acid, glycine or absent. If aspartic acid or glycine then Xaa is positions 15 through 20 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (22)..(22)  
 <223> Xaa at position 22 is serine or absent. If serine then Xaa is positions 15 through 21 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (23)..(23)  
 <223> Xaa at position 23 is serine or absent. If serine then Xaa is positions 15 through 22 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (24)..(24)  
 <223> Xaa at position 24 is aspartic acid or absent. If aspartic acid then Xaa is positions 15 through 23 are not absent.

<400> 44

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr Xaa Xaa Arg Xaa Xaa Xaa Xaa  
 1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20

<210> 45  
 <211> 47  
 <212> PRT  
 <213> Influenza A virus

<220>  
 <221> MISC\_FEATURE  
 <222> (1)..(1)  
 <223> Xaa at position 1 is methionine or absent. If methionine then Xaa in position 2 through 8 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (2)..(2)



<223> Xaa at position 2 is serine or absent. If serine then Xaa in position 3 through 8 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (3)..(3)  
 <223> Xaa at position 3 is leucine or absent. If leucine then Xaa in position 4 through 8 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (4)..(4)  
 <223> Xaa at position 4 is leucine or absent. If leucine then Xaa in position 5 through 8 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (5)..(5)  
 <223> Xaa at position 4 is threonine or absent. If threonine then Xaa in position 6 through 8 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (6)..(6)  
 <223> Xaa at position 6 is glutamic acid or absent. If glutamic acid then Xaa in position 7 through 8 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (7)..(7)  
 <223> Xaa at position 7 is valine or absent. If valine then Xaa in position 8 is not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (8)..(8)  
 <223> Xaa at position 8 is glutamic acid or aspartic acid or absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (10)..(10)  
 <223> Xaa at position 10 is proline, leucine or histidine.

<220>  
 <221> MISC\_FEATURE  
 <222> (11)..(11)  
 <223> Xaa at position 11 is isoleucine or threonine.

<220>  
 <221> MISC\_FEATURE  
 <222> (13)..(13)  
 <223> Xaa at position 13 is asparagine or serine.

<220>  
 <221> MISC\_FEATURE  
 <222> (14)..(14)  
 <223> Xaa at position 14 is glutamic acid or glycine.

<220>  
 <221> MISC\_FEATURE  
 <222> (15)..(15)  
 <223> Xaa at position 15 is tryptophan or absent.



<220>  
 <221> MISC\_FEATURE  
 <222> (16)..(16)  
 <223> Xaa at position 16 is glycine, glutamic acid or absent. If  
 glycine or glutamic acid then Xaa in position 16 is not  
 absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (17)..(17)  
 <223> Xaa at position 17 is absent or present, if present Xaa in  
 position 17 is cysteine, serine or alanine. If Xaa in  
 position  
 17 is present then positions 15 through 16 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (18)..(18)  
 <223> Xaa at position 18 arginine, lysine or absent. If arginine or  
 lysine then Xaa in positions 15 through 17 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (19)..(19)  
 <223> Xaa at position 19 is absent or present, if present Xaa in  
 position 19 is cysteine, serine or alanine. If Xaa is  
 position  
 19 is present then positions 15 through 18 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (20)..(20)  
 <223> Xaa at position 20 is asparagine, serine or glycine or absent.  
 If asparagine or serine then Xaa is positions 15 through 19  
 are  
 not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (21)..(21)  
 <223> Xaa at position 21 is aspartic acid, glycine or absent. If  
 aspartic acid or glycine then Xaa is positions 15 through 20  
 are  
 not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (22)..(22)  
 <223> Xaa at position 22 is serine or absent. If serine then Xaa is  
 positions 15 through 21 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (23)..(23)  
 <223> Xaa at position 23 is serine or absent. If serine then Xaa is  
 positions 15 through 22 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (24)..(24)  
 <223> Xaa at position 24 is aspartic acid or absent. If aspartic  
 acid  
 then Xaa is positions 15 through 23 are not absent.

<220>



<221> MISC\_FEATURE  
 <222> (25)..(25)  
 <223> Xaa at position 25 is serine or absent. If serine then Xaa in  
 positions 26 through 31 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (26)..(26)  
 <223> Xaa at position 26 is leucine or absent. If leucine then Xaa  
 in  
 positions 27 through 31 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (27)..(27)  
 <223> Xaa at position 27 is leucine or absent. If leucine then Xaa  
 in  
 positions 28 through 31 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (28)..(28)  
 <223> Xaa at position 28 is threonine, proline or absent. If  
 threonine  
 or proline then Xaa in positions 29 through 31 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (29)..(29)  
 <223> Xaa at position 29 is glutamic acid or absent. If glutamic  
 acid  
 then Xaa in positions 30 through 31 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (30)..(30)  
 <223> Xaa at position 30 is valine or absent. If valine then Xaa in  
 position 31 is not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (31)..(31)  
 <223> Xaa at position 31 is glutamic acid or aspartic acid or  
 absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (33)..(33)  
 <223> Xaa at position 33 is proline, leucine or histidine.

<220>  
 <221> MISC\_FEATURE  
 <222> (34)..(34)  
 <223> Xaa at position 34 is isoleucine or threonine

<220>  
 <221> MISC\_FEATURE  
 <222> (36)..(36)  
 <223> Xaa at position 36 is asparagine or serine.

<220>  
 <221> MISC\_FEATURE  
 <222> (37)..(37)  
 <223> Xaa at position 37 is glutamic acid or glycine.

<220>



<221> MISC\_FEATURE  
 <222> (38)..(38)  
 <223> Xaa at position 38 is tryptophan or absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (39)..(39)  
 <223> Xaa at position 39 is glycine, glutamic acid or absent. If  
 glycine or glutamic acid then Xaa in position 38 is not  
 absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (40)..(40)  
 <223> Xaa at position 40 is absent or present, if present Xaa in  
 position 40 is cysteine, serine or alanine. If Xaa in  
 position 40 is present then positions 38 through 39 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (41)..(41)  
 <223> Xaa at position 41 is arginine, lysine or absent. If arginine  
 or lysine then Xaa in positions 38 through 40 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (42)..(42)  
 <223> Xaa at position 42 is absent or present, if present Xaa in  
 position 42 is cysteine, serine or alanine. If Xaa in  
 position 42 is present then positions 38 through 41 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (43)..(43)  
 <223> Xaa at position 43 is asparagine, serine or absent. If  
 asparagine or serine then Xaa in positions 38 through 42 are  
 not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (44)..(44)  
 <223> Xaa at position 44 is aspartic acid, glycine or absent. If  
 aspartic acid or glycine then Xaa in positions 38 through 43  
 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (45)..(45)  
 <223> Xaa at position 45 is serine or absent. If serine then Xaa in  
 positions 38 through 44 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (46)..(46)  
 <223> Xaa at position 46 is serine or absent. If serine then Xaa in  
 positions 38 through 45 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (47)..(47)



<223> Xaa at position 47 is aspartic acid or absent. If aspartic acid then Xaa in positions 38 through 46 are not absent.

<400> 45

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr Xaa Xaa Arg Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr  
20 25 30

Xaa Xaa Arg Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
35 40 45

<210> 46

<211> 70

<212> PRT

<213> Influenza A virus

<220>

<221> MISC\_FEATURE

<222> (1)..(1)

<223> Xaa at position 1 is methionine or absent. If methionine then Xaa in position 2 through 8 are not absent.

<220>

<221> MISC\_FEATURE

<222> (2)..(2)

<223> Xaa at position 2 is serine or absent. If serine then Xaa in position 3 through 8 are not absent.

<220>

<221> MISC\_FEATURE

<222> (3)..(3)

<223> Xaa at position 3 is leucine or absent. If leucine then Xaa in position 4 through 8 are not absent.

<220>

<221> MISC\_FEATURE

<222> (4)..(4)

<223> Xaa at position 4 is leucine or absent. If leucine then Xaa in position 5 through 8 are not absent.

<220>

<221> MISC\_FEATURE

<222> (5)..(5)

<223> Xaa at position 5 is threonine or absent. If threonine then Xaa in position 6 through 8 are not absent.

<220>

<221> MISC\_FEATURE

<222> (6)..(6)

<223> Xaa at position 6 is glutamic acid or absent. If glutamic acid then Xaa in position 7 through 8 are not absent.

<220>

<221> MISC\_FEATURE



<222> (7)..(7)  
 <223> Xaa at position 7 is valine or absent. If valine then Xaa in position 8 is not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (8)..(8)  
 <223> Xaa at position 8 is glutamic acid or absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (10)..(10)  
 <223> Xaa at position 10 is proline, leucine or histidine.

<220>  
 <221> MISC\_FEATURE  
 <222> (11)..(11)  
 <223> Xaa at position 11 is isoleucine or threonine.

<220>  
 <221> MISC\_FEATURE  
 <222> (13)..(13)  
 <223> Xaa at position 13 is asparagine or serine.

<220>  
 <221> MISC\_FEATURE  
 <222> (14)..(14)  
 <223> Xaa at position 14 is glutamic acid or glycine.

<220>  
 <221> MISC\_FEATURE  
 <222> (15)..(15)  
 <223> Xaa at position 15 is tryptophan or absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (16)..(16)  
 <223> Xaa at position 16 is glycine, glutamic acid or absent. If glycine or glutamic acid then Xaa in position 16 is not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (17)..(17)  
 <223> Xaa at position 17 is absent or present, if present Xaa in position 17 is cysteine, serine or alanine. If Xaa in position 17 is present then positions 15 through 16 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (18)..(18)  
 <223> Xaa at position 18 arginine, lysine or absent. If arginine or lysine then Xaa in positions 15 through 17 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (19)..(19)  
 <223> Xaa at position 19 is absent or present, if present Xaa in position 19 is cysteine, serine or alanine. If Xaa is position 19 is present then positions 15 through 18 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (20)..(20)



<223> Xaa at position 20 is asparagine, serine, glycine or absent.  
 If  
     asparagine or serine then Xaa is positions 15 through 19 are  
 not  
     absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (21)..(21)  
 <223> Xaa at position 21 is aspartic acid, glycine or absent. If  
     aspartic acid or glycine then Xaa is positions 15 through 20  
 are  
     not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (22)..(22)  
 <223> Xaa at position 22 is serine or absent. If serine then Xaa is  
     positions 15 through 21 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (23)..(23)  
 <223> Xaa at position 23 is serine or absent. If serine then Xaa is  
     positions 15 through 22 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (24)..(24)  
 <223> Xaa at position 24 is aspartic acid or absent. If aspartic  
 acid  
     then Xaa is positions 15 through 23 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (25)..(25)  
 <223> Xaa at position 25 is serine or absent. If serine then Xaa in  
     positions 26 through 31 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (26)..(26)  
 <223> Xaa at position 26 is leucine or absent. If leucine then Xaa  
 in  
     positions 27 through 31 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (27)..(27)  
 <223> Xaa at position 27 is leucine or absent. If leucine then Xaa  
 in  
     positions 28 through 31 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (28)..(28)  
 <223> Xaa at position 28 is threonine, proline or absent. If  
 threonine  
     or proline then Xaa in positions 29 through 31 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (29)..(29)  
 <223> Xaa at position 29 is glutamic acid or absent. If glutamic  
 acid  
     then Xaa in positions 30 through 31 are not absent.



<220>  
 <221> MISC\_FEATURE  
 <222> (30)..(30)  
 <223> Xaa at position 30 is valine or absent. If valine then Xaa in position 31 is not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (31)..(31)  
 <223> Xaa at position 31 is glutamic acid or aspartic acid or absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (33)..(33)  
 <223> Xaa at position 33 is proline, leucine or histidine.

<220>  
 <221> MISC\_FEATURE  
 <222> (34)..(34)  
 <223> Xaa at position 34 is isoleucine or threonine

<220>  
 <221> MISC\_FEATURE  
 <222> (36)..(36)  
 <223> Xaa at position 36 is asparagine or serine.

<220>  
 <221> MISC\_FEATURE  
 <222> (37)..(37)  
 <223> Xaa at position 37 is glutamic acid or glycine.

<220>  
 <221> MISC\_FEATURE  
 <222> (38)..(38)  
 <223> Xaa at position 38 is tryptophan or absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (39)..(39)  
 <223> Xaa at position 39 is glycine, glutamic acid or absent. If glycine or glutamic acid then Xaa in position 38 is not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (40)..(40)  
 <223> Xaa at position 40 is absent or present, if present Xaa in position 40 is cysteine, serine or alanine. If Xaa in position 40 is present then positions 38 through 39 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (41)..(41)  
 <223> Xaa at position 41 is arginine, lysine or absent. If arginine or lysine then Xaa in positions 38 through 40 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (42)..(42)  
 <223> Xaa at position 42 is absent or present, if present Xaa in position 42 is cysteine, serine or alanine. If Xaa in position



42 is present then positions 38 through 41 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (43)..(43)  
 <223> Xaa at position 43 is asparagine, serine, glycine or absent.  
 If  
     asparagine or serine or glycine then Xaa in positions 38  
 through  
     42 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (44)..(44)  
 <223> Xaa at position 44 is aspartic acid, glycine or absent. If  
     aspartic acid or glycine then Xaa in positions 38 through 43  
 are  
     not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (45)..(45)  
 <223> Xaa at position 45 is serine or absent. If serine then Xaa in  
     positions 38 through 44 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (46)..(46)  
 <223> Xaa at position 46 is serine or absent. If serine then Xaa in  
     positions 38 through 45 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (47)..(47)  
 <223> Xaa at position 47 is aspartic acid or absent. If aspartic  
 acid  
     then Xaa in positions 38 through 46 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (48)..(48)  
 <223> Xaa at position 48 is serine or absent. If serine then Xaa in  
     positions 49 through 54 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (49)..(49)  
 <223> Xaa at position 49 is leucine or absent. If leucine then Xaa  
 in  
     positions 50 through 54 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (50)..(50)  
 <223> Xaa at position 50 is leucine or absent. If leucine then Xaa  
 in  
     positions 51 through 54 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (51)..(51)  
 <223> Xaa at position 51 is threonine, proline or absent. If  
 threonine  
     or proline then Xaa in positions 52 through 54 are not absent.

<220>



<221> MISC\_FEATURE  
 <222> (52)..(52)  
 <223> Xaa at position 52 is glutamic acid or absent. If glutamic acid  
 then Xaa in positions 53 through 54 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (53)..(53)  
 <223> Xaa at position 53 is valine or absent. If valine then Xaa in  
 position 54 is not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (54)..(54)  
 <223> Xaa at position 54 is glutamic acid or aspartic acid or absent

<220>  
 <221> MISC\_FEATURE  
 <222> (56)..(56)  
 <223> Xaa at position 56 is proline, leucine or histidine.

<220>  
 <221> MISC\_FEATURE  
 <222> (57)..(57)  
 <223> Xaa at position 57 is isoleucine or threonine.

<220>  
 <221> MISC\_FEATURE  
 <222> (59)..(59)  
 <223> Xaa at position 59 is asparagine or serine.

<220>  
 <221> MISC\_FEATURE  
 <222> (60)..(60)  
 <223> Xaa at position 60 is glutamic acid or glycine.

<220>  
 <221> MISC\_FEATURE  
 <222> (61)..(61)  
 <223> Xaa at position 61 is tryptophan or absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (62)..(62)  
 <223> Xaa at position 62 is glycine, glutamic acid or absent. If  
 glycine or glutamic acid then Xaa in position 61 is not  
 absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (63)..(63)  
 <223> Xaa at position 63 is absent or present, if present Xaa in  
 position 63 is cysteine, serine or alanine. If Xaa in  
 position  
 63 is present then positions 61 through 62 are not absent.

<220>  
 <221> MISC\_FEATURE  
 <222> (64)..(64)  
 <223> Xaa at position 64 is arginine, lysine or absent. If arginine  
 or  
 lysine then Xaa in positions 61 through 63 are not absent.

<220>  
 <221> MISC\_FEATURE



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<222> (65)..(65)
<223> Xaa at position 65 is absent or present, if present Xaa in
position 65 is cysteine, serine or alanine. If Xaa in
        65 is present then positions 61 through 64 are not absent.

<220>
<221> MISC_FEATURE
<222> (66)..(66)
<223> Xaa at position 66 is asparagine, serine, glycine or absent.
If
        asparagine or serine or glycine then Xaa in positions 61
through
        65 are not absent.

<220>
<221> MISC_FEATURE
<222> (67)..(67)
<223> Xaa at position 67 is aspartic acid, glycine or absent. If
aspartic acid or glycine then Xaa in positions 61 through 66
are
        not absent.

<220>
<221> MISC_FEATURE
<222> (68)..(68)
<223> Xaa at position 68 is serine or absent. If serine then Xaa in
positions 61 through 67 are not absent.

<220>
<221> MISC_FEATURE
<222> (69)..(69)
<223> Xaa at position 69 is serine or absent. If serine then Xaa in
positions 61 through 68 are not absent.

<220>
<221> MISC_FEATURE
<222> (70)..(70)
<223> Xaa at position 70 is aspartic acid or absent. If aspartic
acid
        then Xaa in positions 61 through 69 are not absent.

<400> 46

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr Xaa Xaa Arg Xaa Xaa Xaa Xaa
1          5          10          15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr
20          25          30

Xaa Xaa Arg Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
35          40          45

Xaa Xaa Xaa Xaa Xaa Xaa Thr Xaa Xaa Arg Xaa Xaa Xaa Xaa Xaa Xaa
50          55          60

Xaa Xaa Xaa Xaa Xaa Xaa
65          70

<210> 47
<211> 17

```



<212> PRT  
<213> Influenza B virus

<400> 47

Asn Asn Ala Thr Phe Asn Tyr Thr Asn Val Asn Pro Ile Ser His Ile  
1 5 10 15

Arg

<210> 48  
<211> 142  
<212> PRT  
<213> Yersinia pestis

<400> 48

Asp Ile Leu Lys Val Ile Val Asp Ser Met Asn His His Gly Asp Ala  
1 5 10 15

Arg Ser Lys Leu Arg Glu Glu Leu Ala Glu Leu Thr Ala Glu Leu Lys  
20 25 30

Ile Tyr Ser Val Ile Gln Ala Glu Ile Asn Lys His Leu Ser Ser Ser  
35 40 45

Gly Thr Ile Asn Ile His Asp Lys Ser Ile Asn Leu Met Asp Lys Asn  
50 55 60

Leu Tyr Gly Tyr Thr Asp Glu Glu Ile Phe Lys Ala Ser Ala Glu Tyr  
65 70 75 80

Lys Ile Leu Glu Lys Met Pro Gln Thr Thr Ile Gln Val Asp Gly Ser  
85 90 95

Glu Lys Lys Ile Val Ser Ile Lys Asp Phe Leu Gly Ser Glu Asn Lys  
100 105 110

Arg Thr Gly Ala Leu Gly Asn Leu Lys Asn Ser Tyr Ser Tyr Asn Lys  
115 120 125

Asp Asn Asn Glu Leu Ser His Phe Ala Thr Thr Cys Ser Asp  
130 135 140

<210> 49  
<211> 19  
<212> PRT  
<213> Haemophilus influenzae

<400> 49

Cys Ser Ser Ser Asn Asn Asp Ala Ala Gly Asn Gly Ala Ala Gln Phe  
1 5 10 15



Gly Gly Tyr

<210> 50  
<211> 11  
<212> PRT  
<213> Haemophilus influenzae

<400> 50

Asn Lys Leu Gly Thr Val Ser Tyr Gly Glu Glu  
1 5 10

<210> 51  
<211> 16  
<212> PRT  
<213> Haemophilus influenzae

<400> 51

Asn Asp Glu Ala Ala Tyr Ser Lys Asn Arg Arg Ala Val Leu Ala Tyr  
1 5 10 15

<210> 52  
<211> 28  
<212> PRT  
<213> Moraxella catarrhalis

<400> 52

Leu Asp Ile Glu Lys Asp Lys Lys Lys Arg Thr Asp Glu Gln Leu Gln  
1 5 10 15

Ala Glu Leu Asp Asp Lys Tyr Ala Gly Lys Gly Tyr  
20 25

<210> 53  
<211> 28  
<212> PRT  
<213> Moraxella catarrhalis

<400> 53

Leu Asp Ile Glu Lys Asn Lys Lys Lys Arg Thr Glu Ala Glu Leu Gln  
1 5 10 15

Ala Glu Leu Asp Asp Lys Tyr Ala Gly Lys Gly Tyr  
20 25

<210> 54  
<211> 28  
<212> PRT  
<213> Moraxella catarrhalis

<400> 54

Ile Asp Ile Glu Lys Lys Gly Lys Ile Arg Thr Glu Ala Glu Leu Leu  
1 5 10 15



Ala Glu Leu Asn Lys Asp Tyr Pro Gly Gln Gly Tyr  
20 25

<210> 55  
<211> 25  
<212> PRT  
<213> Porphyromonas gingivalis

<400> 55

Gly Val Ser Pro Lys Val Cys Lys Asp Val Thr Val Glu Gly Ser Asn  
1 5 10 15

Glu Phe Ala Pro Val Gln Asn Leu Thr  
20 25

<210> 56  
<211> 20  
<212> PRT  
<213> Porphyromonas gingivalis

<400> 56

Arg Ile Gln Ser Thr Trp Arg Gln Lys Thr Val Asp Leu Pro Ala Gly  
1 5 10 15

Thr Lys Tyr Val  
20

<210> 57  
<211> 21  
<212> PRT  
<213> Trypanosoma cruzi

<400> 57

Lys Ala Ala Ile Ala Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys Ala  
1 5 10 15

Ala Thr Ala Pro Ala  
20

<210> 58  
<211> 24  
<212> PRT  
<213> Plasmodium falciparum

<400> 58

Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro  
1 5 10 15

Asn Ala Asn Pro Asn Val Asp Pro  
20



<210> 59  
 <211> 20  
 <212> PRT  
 <213> Plasmodium falciparum

<400> 59

Asn	Ala	Asn	Pro	Asn	Val	Asp	Pro	Asn	Ala	Asn	Pro	Asn	Ala	Asn	Pro
1				5					10					15	

Asn	Ala	Asn	Pro
			20

<210> 60  
 <211> 20  
 <212> PRT  
 <213> Plasmodium falciparum

<400> 60

Asn	Ala	Asn	Pro	Asn	Ala	Asn	Pro	Asn	Ala	Asn	Pro	Asn	Val	Asp	Pro
1				5					10					15	

Asn	Ala	Asn	Pro
			20

<210> 61  
 <211> 28  
 <212> PRT  
 <213> Plasmodium falciparum

<400> 61

Asn	Ala	Asn	Pro	Asn	Val	Asp	Pro	Asn	Ala	Asn	Pro	Asn	Ala	Asn	Pro
1				5					10					15	

Asn	Ala	Asn	Pro	Asn	Val	Asp	Pro	Asn	Ala	Asn	Pro
				20					25		

<210> 62  
 <211> 20  
 <212> PRT  
 <213> Plasmodium falciparum

<400> 62

Asn	Pro	Asn	Val	Asp	Pro	Asn	Ala	Asn	Pro	Asn	Ala	Asn	Pro	Asn	Ala
1				5					10					15	

Asn	Pro	Asn	Val
			20

<210> 63  
 <211> 22  
 <212> PRT  
 <213> Plasmodium falciparum

<400> 63



Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala  
 1 5 10 15

Asn Pro Asn Val Asp Pro  
 20

<210> 64  
 <211> 24  
 <212> PRT  
 <213> Plasmodium falciparum

<400> 64

Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala  
 1 5 10 15

Asn Pro Asn Val Asp Pro Asn Ala  
 20

<210> 65  
 <211> 18  
 <212> PRT  
 <213> Plasmodium falciparum

<400> 65

Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro  
 1 5 10 15

Asn Val

<210> 66  
 <211> 20  
 <212> PRT  
 <213> Plasmodium falciparum

<400> 66

Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro  
 1 5 10 15

Asn Val Asp Pro  
 20

<210> 67  
 <211> 22  
 <212> PRT  
 <213> Plasmodium falciparum

<400> 67

Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro  
 1 5 10 15

Asn Val Asp Pro Asn Ala



20

<210> 68  
<211> 16  
<212> PRT  
<213> Plasmodium falciparum  
  
<400> 68

Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Val  
1 5 10 15

<210> 69  
<211> 18  
<212> PRT  
<213> Plasmodium falciparum  
  
<400> 69

Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Val  
1 5 10 15

Asp Pro

<210> 70  
<211> 20  
<212> PRT  
<213> Plasmodium falciparum  
  
<400> 70

Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Val  
1 5 10 15

Asp Pro Asn Ala  
20

<210> 71  
<211> 19  
<212> PRT  
<213> Plasmodium vivax  
  
<400> 71

Gly Asp Arg Ala Asp Gly Gln Pro Ala Gly Asp Arg Ala Asp Gly Gln  
1 5 10 15

Pro Ala Gly

<210> 72  
<211> 18  
<212> PRT  
<213> Plasmodium vivax  
  
<400> 72



Arg Ala Asp Asp Arg Ala Ala Gly Gln Pro Ala Gly Asp Gly Gln Pro  
 1 5 10 15

Ala Gly

<210> 73  
 <211> 18  
 <212> PRT  
 <213> Plasmodium vivax

<400> 73

Ala Asn Gly Ala Gly Asn Gln Pro Gly Ala Asn Gly Ala Gly Asp Gln  
 1 5 10 15

Pro Gly

<210> 74  
 <211> 18  
 <212> PRT  
 <213> Plasmodium vivax

<400> 74

Ala Asn Gly Ala Asp Asn Gln Pro Gly Ala Asn Gly Ala Asp Asp Gln  
 1 5 10 15

Pro Gly

<210> 75  
 <211> 18  
 <212> PRT  
 <213> Plasmodium vivax

<400> 75

Ala Asn Gly Ala Gly Asn Gln Pro Gly Ala Asn Gly Ala Asp Asn Gln  
 1 5 10 15

Pro Gly

<210> 76  
 <211> 18  
 <212> PRT  
 <213> Plasmodium vivax

<400> 76

Ala Asn Gly Ala Gly Asn Gln Pro Gly Ala Asn Gly Ala Asp Asp Gln  
 1 5 10 15

Pro Gly



<210> 77  
<211> 22  
<212> PRT  
<213> Plasmodium vivax

<400> 77

Ala Pro Gly Ala Asn Gln Glu Gly Gly Ala Ala Ala Pro Gly Ala Asn  
1 5 10 15

Gln Glu Gly Gly Ala Ala  
20

<210> 78  
<211> 36  
<212> PRT  
<213> Plasmodium vivax

<400> 78

Ala Asn Gly Ala Gly Asn Gln Pro Gly Ala Asn Gly Ala Gly Asp Gln  
1 5 10 15

Pro Gly Ala Asn Gly Ala Asp Asn Gln Pro Gly Ala Asn Gly Ala Asp  
20 25 30

Asp Gln Pro Gly  
35

<210> 79  
<211> 16  
<212> PRT  
<213> Plasmodium berghei

<400> 79

Asp Pro Pro Pro Pro Asn Pro Asn Asp Pro Pro Pro Pro Asn Pro Asn  
1 5 10 15

<210> 80  
<211> 24  
<212> PRT  
<213> Plasmodium yoelii

<400> 80

Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly  
1 5 10 15

Ala Pro Gln Gly Pro Gly Ala Pro  
20

<210> 81  
<211> 15  
<212> PRT  
<213> Streptococcus sobrinus



<400> 81

Lys Pro Arg Pro Ile Tyr Glu Ala Lys Leu Ala Gln Asn Gln Lys  
1 5 10 15

<210> 82

<211> 16

<212> PRT

<213> Streptococcus sobrinus

<400> 82

Ala Lys Ala Asp Tyr Glu Ala Lys Leu Ala Gln Tyr Glu Lys Asp Leu  
1 5 10 15

<210> 83

<211> 9

<212> PRT

<213> Shigella flexneri

<400> 83

Lys Asp Arg Thr Leu Ile Glu Gln Lys  
1 5

<210> 84

<211> 15

<212> PRT

<213> respiratory syncytial virus

<400> 84

Cys Ser Ile Cys Ser Asn Asn Pro Thr Cys Trp Ala Ile Cys Lys  
1 5 10 15

<210> 85

<211> 25

<212> PRT

<213> Entamoeba histolytica

<400> 85

Val Glu Cys Ala Ser Thr Val Cys Gln Asn Asp Asn Ser Cys Pro Ile  
1 5 10 15

Ile Ala Asp Val Glu Lys Cys Asn Gln  
20 25

<210> 86

<211> 34

<212> PRT

<213> Schistosoma japonicum

<400> 86

Asp Leu Gln Ser Glu Ile Ser Leu Ser Leu Glu Asn Gly Glu Leu Ile  
1 5 10 15



Arg Arg Ala Lys Ser Ala Glu Ser Leu Ala Ser Glu Leu Gln Arg Arg  
 20 25 30

Val Asp

<210> 87  
 <211> 34  
 <212> PRT  
 <213> Schistosoma mansoni

<400> 87

Asp Leu Gln Ser Glu Ile Ser Leu Ser Leu Glu Asn Ser Glu Leu Ile  
 1 5 10 15

Arg Arg Ala Lys Ala Ala Glu Ser Leu Ala Ser Asp Leu Gln Arg Arg  
 20 25 30

Val Asp

<210> 88  
 <211> 26  
 <212> PRT  
 <213> Bovine Inhibin

<400> 88

Ser Thr Pro Pro Leu Pro Trp Pro Trp Ser Pro Ala Ala Leu Arg Leu  
 1 5 10 15

Leu Gln Arg Pro Pro Glu Glu Pro Ala Ala  
 20 25

<210> 89  
 <211> 17  
 <212> PRT  
 <213> Ebola virus

<400> 89

Ala Thr Gln Val Glu Gln His His Arg Arg Thr Asp Asn Asp Ser Thr  
 1 5 10 15

Ala

<210> 90  
 <211> 17  
 <212> PRT  
 <213> Ebola virus

<400> 90

His Asn Thr Pro Val Tyr Lys Leu Asp Ile Ser Glu Ala Thr Gln Val  
 1 5 10 15



Glu

<210> 91  
<211> 17  
<212> PRT  
<213> Ebola virus

<400> 91

Gly Lys Leu Gly Leu Ile Thr Asn Thr Ile Ala Gly Val Ala Val Leu  
1 5 10 15

Ile

<210> 92  
<211> 14  
<212> PRT  
<213> Escherichia coli

<400> 92

Cys Cys Glu Leu Cys Cys Tyr Pro Ala Cys Ala Gly Cys Asn  
1 5 10

<210> 93  
<211> 18  
<212> PRT  
<213> Escherichia coli

<400> 93

Asn Thr Phe Tyr Cys Cys Glu Leu Cys Cys Tyr Pro Ala Cys Ala Gly  
1 5 10 15

Cys Asn

<210> 94  
<211> 18  
<212> PRT  
<213> Escherichia coli

<400> 94

Ser Ser Asn Tyr Cys Cys Glu Leu Cys Cys Tyr Pro Ala Cys Ala Gly  
1 5 10 15

Cys Asn

<210> 95  
<211> 42  
<212> PRT  
<213> Alzheimer's disease b-Amyloid



<400> 95

Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val His His Gln Lys  
1 5 10 15

Leu Val Phe Phe Ala Glu Asp Val Gly Ser Asn Lys Gly Ala Ile Ile  
20 25 30

Gly Leu Met Val Gly Gly Val Val Ile Ala  
35 40

<210> 96

<211> 17

<212> PRT

<213> Alzheimer's disease b-Amyloid

<400> 96

Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val His His Gln Lys  
1 5 10 15

Leu

<210> 97

<211> 11

<212> PRT

<213> Alzheimer's disease b-Amyloid

<400> 97

Glu Asp Val Gly Ser Asn Lys Gly Ala Ile Ile  
1 5 10

<210> 98

<211> 33

<212> PRT

<213> Alzheimer's disease b-Amyloid

<400> 98

Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val His His Gln Lys  
1 5 10 15

Leu Val Phe Phe Ala Glu Asp Val Gly Ser Asn Lys Gly Ala Ile Ile  
20 25 30

Gly

<210> 99

<211> 32

<212> PRT

<213> alzheimer's disease b-amplvoid

<400> 99



Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val His His Gln Lys  
 1 5 10 15

Leu Val Phe Phe Ala Glu Asp Val Gly Ser Asn Lys Gly Ala Ile Ile  
 20 25 30

<210> 100  
 <211> 13  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 100

Tyr Val Ala Val Glu Asn Gly Val Ala Lys Lys Val Ala  
 1 5 10

<210> 101  
 <211> 15  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 101

His Phe Val Gln Gln Thr Pro Lys Ser Gln Pro Thr Leu Val Pro  
 1 5 10 15

<210> 102  
 <211> 13  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 102

His Val Val Val Asn Asn Lys Val Ala Thr His Val Pro  
 1 5 10

<210> 103  
 <211> 12  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 103

Pro Leu Gln Asn Ile Gln Pro Gln Val Thr Lys Arg  
 1 5 10

<210> 104  
 <211> 21  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 104

Ala Gln Ala Ala Asn Gly Gly Ala Ala Ser Gly Gln Val Lys Val Thr  
 1 5 10 15

Lys Val Thr Lys Ala  
 20



<210> 105  
<211> 10  
<212> PRT  
<213> Neisseria meningitidis

<400> 105

Tyr Val Asp Glu Gln Ser Lys Tyr His Ala  
1 5 10

<210> 106  
<211> 15  
<212> PRT  
<213> Neisseria meningitidis

<400> 106

His Phe Val Gln Asn Lys Gln Asn Gln Pro Pro Thr Leu Val Pro  
1 5 10 15

<210> 107  
<211> 18  
<212> PRT  
<213> Neisseria meningitidis

<400> 107

Lys Pro Ser Ser Thr Asn Ala Lys Thr Gly Asn Lys Val Glu Val Thr  
1 5 10 15

Lys Ala

<210> 108  
<211> 17  
<212> PRT  
<213> Neisseria meningitidis

<400> 108

Tyr Trp Thr Thr Val Asn Thr Gly Ser Ala Thr Thr Thr Thr Phe Val  
1 5 10 15

Pro

<210> 109  
<211> 11  
<212> PRT  
<213> Neisseria meningitidis

<400> 109

Tyr Val Asp Glu Lys Lys Lys Met Val His Ala  
1 5 10

<210> 110



<211> 13  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 110

His Tyr Thr Arg Gln Asn Asn Ala Asp Val Phe Val Pro  
 1 5 10

<210> 111  
 <211> 14  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 111

Tyr Tyr Thr Lys Asp Thr Asn Asn Asn Leu Thr Leu Val Pro  
 1 5 10

<210> 112  
 <211> 14  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 112

Pro Pro Gln Lys Asn Gln Ser Gln Pro Val Val Thr Lys Ala  
 1 5 10

<210> 113  
 <211> 14  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 113

Pro Pro Ser Lys Gly Gln Thr Gly Asn Lys Val Thr Lys Gly  
 1 5 10

<210> 114  
 <211> 14  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 114

Pro Pro Ser Lys Ser Gln Pro Gln Val Lys Val Thr Lys Ala  
 1 5 10

<210> 115  
 <211> 18  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 115

Gln Pro Gln Thr Ala Asn Thr Gln Gln Gly Gly Lys Val Lys Val Thr  
 1 5 10 15

Lys Ala



<210> 116  
<211> 18  
<212> PRT  
<213> Neisseria meningitidis

<400> 116

Gln Pro Gln Val Thr Asn Gly Val Gln Gly Asn Gln Val Lys Val Thr  
1 5 10 15

Lys Ala

<210> 117  
<211> 18  
<212> PRT  
<213> Neisseria meningitidis

<400> 117

Gln Pro Ser Lys Ala Gln Gly Gln Thr Asn Asn Gln Val Lys Val Thr  
1 5 10 15

Lys Ala

<210> 118  
<211> 20  
<212> PRT  
<213> Neisseria meningitidis

<400> 118

Pro Pro Ser Ser Asn Gln Gly Lys Asn Gln Ala Gln Thr Gly Asn Thr  
1 5 10 15

Val Thr Lys Ala  
20

<210> 119  
<211> 18  
<212> PRT  
<213> Neisseria meningitidis

<400> 119

Pro Pro Ser Lys Ser Gln Gly Lys Thr Gly Asn Gln Val Lys Val Thr  
1 5 10 15

Lys Ala

<210> 120  
<211> 18  
<212> PRT



<213> Neisseria meningitidis

<400> 120

Pro Pro Ser Lys Ser Gln Gly Thr Asn Asn Asn Gln Val Lys Val Thr  
1 5 10 15

Lys Ala

<210> 121

<211> 18

<212> PRT

<213> Neisseria meningitidis

<400> 121

Pro Pro Ser Lys Ser Gln Pro Gly Gln Val Lys Val Thr Lys Val Thr  
1 5 10 15

Lys Ala

<210> 122

<211> 24

<212> PRT

<213> Neisseria meningitidis

<400> 122

Gln Leu Gln Leu Thr Glu Gln Pro Ser Ser Thr Asn Gly Gln Thr Gly  
1 5 10 15

Asn Gln Val Lys Val Thr Lys Ala  
20

<210> 123

<211> 24

<212> PRT

<213> Neisseria meningitidis

<400> 123

Gln Leu Gln Leu Thr Glu Ala Pro Ser Lys Ser Gln Gly Ala Ala Ser  
1 5 10 15

Asn Gln Val Lys Val Thr Lys Ala  
20

<210> 124

<211> 19

<212> PRT

<213> Neisseria meningitidis

<400> 124

Ser Ala Tyr Thr Pro Ala His Val Tyr Val Asp Asn Lys Val Ala Lys  
1 5 10 15



His Val Ala

<210> 125  
<211> 21  
<212> PRT  
<213> Neisseria meningitidis

<400> 125

Ser Ala Tyr Thr Pro Ala His Phe Val Gln Asn Lys Gln Asn Asn Asn  
1 5 10 15

Pro Thr Leu Val Pro  
20

<210> 126  
<211> 12  
<212> PRT  
<213> Neisseria meningitidis

<400> 126

Val Glu Gly Arg Asn Tyr Gln Leu Gln Leu Thr Glu  
1 5 10

<210> 127  
<211> 12  
<212> PRT  
<213> Neisseria meningitidis

<400> 127

Pro Ala Gln Asn Ser Lys Ser Ala Tyr Thr Pro Ala  
1 5 10

<210> 128  
<211> 22  
<212> PRT  
<213> Neisseria meningitidis

<400> 128

Gln Leu Gln Leu Thr Glu Pro Pro Ser Lys Asn Gln Ala Gln Thr Gln  
1 5 10 15

Asn Lys Val Thr Lys Ala  
20

<210> 129  
<211> 16  
<212> PRT  
<213> Neisseria meningitidis

<400> 129

Gly Arg Asp Ala Phe Glu Leu Phe Leu Leu Gly Ser Gly Ser Asp Glu







Thr Leu Val Pro Ala Val Val Gly Lys Pro Gly Ser Asp  
1 5 10

<210> 135  
<211> 17  
<212> PRT  
<213> Neisseria meningitidis

<400> 135

His Ala Lys Ala Ser Ser Ser Leu Gly Ser Ala Lys Gly Phe Ser Pro  
1 5 10 15

Arg

<210> 136  
<211> 15  
<212> PRT  
<213> Neisseria meningitidis

<400> 136

Thr Arg Tyr Lys Asn Tyr Lys Ala Pro Ser Thr Asp Phe Lys Leu  
1 5 10 15

<210> 137  
<211> 18  
<212> PRT  
<213> Neisseria meningitidis

<400> 137

Ser Leu Asn Arg Ala Ser Val Asp Leu Gly Gly Ser Asp Ser Phe Ser  
1 5 10 15

Gln Thr

<210> 138  
<211> 21  
<212> PRT  
<213> Neisseria meningitidis

<400> 138

Gly Lys Val Asn Thr Val Lys Asn Val Arg Ser Gly Glu Leu Ser Ala  
1 5 10 15

Gly Val Arg Val Lys  
20

<210> 139  
<211> 21  
<212> PRT  
<213> Neisseria meningitidis

<400> 139



Gly Lys Val Asn Thr Val Lys Asn Val Arg Ser Gly Glu Leu Ser Val  
 1 5 10 15

Gly Val Arg Val Lys  
 20

<210> 140  
 <211> 13  
 <212> PRT  
 <213> Homo sapiens

<400> 140

Ala Pro Glu Trp Pro Gly Ser Arg Asp Lys Arg Thr Leu  
 1 5 10

<210> 141  
 <211> 9  
 <212> PRT  
 <213> Homo sapiens

<400> 141

Glu Asp Gly Gln Val Met Asp Val Asp  
 1 5

<210> 142  
 <211> 8  
 <212> PRT  
 <213> Homo sapiens

<400> 142

Ser Thr Thr Gln Glu Gly Glu Leu  
 1 5

<210> 143  
 <211> 10  
 <212> PRT  
 <213> Homo sapiens

<400> 143

Gly His Thr Phe Glu Asp Ser Thr Lys Lys  
 1 5 10

<210> 144  
 <211> 8  
 <212> PRT  
 <213> Homo sapiens

<400> 144

Gly Gly Gly His Phe Pro Pro Thr  
 1 5

<210> 145  
 <211> 6



<212> PRT  
<213> Homo sapiens  
  
<400> 145

Pro Gly Thr Ile Asn Ile  
1 5

<210> 146  
<211> 5  
<212> PRT  
<213> Homo sapiens  
  
<400> 146

Phe Thr Pro Pro Thr  
1 5

<210> 147  
<211> 8  
<212> PRT  
<213> Homo sapiens  
  
<400> 147

Ile Asn His Arg Gly Tyr Trp Val  
1 5

<210> 148  
<211> 17  
<212> PRT  
<213> Homo sapiens  
  
<400> 148

Gly Glu Phe Cys Ile Asn His Arg Gly Tyr Trp Val Cys Gly Asp Pro  
1 5 10 15

Ala

<210> 149  
<211> 14  
<212> PRT  
<213> Homo sapiens  
  
<400> 149

Met Ala Pro Glu Trp Pro Gly Ser Arg Asp Lys Arg Thr Leu  
1 5 10

<210> 150  
<211> 10  
<212> PRT  
<213> Homo sapiens  
  
<400> 150

Met Glu Asp Gly Gln Val Met Asp Val Asp  
1 5 10



<210> 151  
<211> 9  
<212> PRT  
<213> Homo sapiens

<400> 151

Met Ser Thr Thr Gln Glu Gly Glu Leu  
1 5

<210> 152  
<211> 11  
<212> PRT  
<213> Homo sapiens

<400> 152

Met Gly His Thr Phe Glu Asp Ser Thr Lys Lys  
1 5 10

<210> 153  
<211> 9  
<212> PRT  
<213> Homo sapiens

<400> 153

Met Gly Gly Gly His Phe Pro Pro Thr  
1 5

<210> 154  
<211> 7  
<212> PRT  
<213> Homo sapiens

<400> 154

Met Pro Gly Thr Ile Asn Ile  
1 5

<210> 155  
<211> 6  
<212> PRT  
<213> Homo sapiens

<400> 155

Met Phe Thr Pro Pro Thr  
1 5

<210> 156  
<211> 9  
<212> PRT  
<213> Homo sapiens

<400> 156

Met Ile Asn His Arg Gly Tyr Trp Val  
1 5



<210> 157  
<211> 18  
<212> PRT  
<213> Homo sapiens

<400> 157

Met Gly Glu Phe Cys Ile Asn His Arg Gly Tyr Trp Val Cys Gly Asp  
1 5 10 15

Pro Ala

<210> 158  
<211> 21  
<212> PRT  
<213> Hepatitis B virus

<400> 158

Met Gly Thr Asn Leu Ser Val Pro Asn Pro Leu Gly Phe Phe Pro Asp  
1 5 10 15

His Gln Leu Asp Pro  
20

<210> 159  
<211> 8  
<212> PRT  
<213> Hepatitis B virus

<400> 159

Pro Leu Gly Phe Phe Pro Asp His  
1 5

<210> 160  
<211> 10  
<212> PRT  
<213> Hepatitis B virus

<400> 160

Pro Leu Gly Phe Phe Pro Asp His Gln Leu  
1 5 10

<210> 161  
<211> 26  
<212> PRT  
<213> Hepatitis B virus

<400> 161

Met Gln Trp Asn Ser Thr Ala Phe His Gln Thr Leu Gln Asp Pro Arg  
1 5 10 15

Val Arg Gly Leu Tyr Leu Pro Ala Gly Gly



20

25

<210> 162  
 <211> 14  
 <212> PRT  
 <213> Hepatitis B

<400> 162

Met Gln Trp Ser Thr Ala Phe His Gln Thr Leu Gln Asp Pro  
 1 5 10

<210> 163  
 <211> 14  
 <212> PRT  
 <213> Hepatitis B virus

<400> 163

Met Gln Trp Ser Thr Ala Leu His Gln Ala Leu Gln Asp Pro  
 1 5 10

<210> 164  
 <211> 6  
 <212> PRT  
 <213> Hepatitis B virus

<400> 164

Gln Asp Pro Arg Val Arg  
 1 5

<210> 165  
 <211> 13  
 <212> PRT  
 <213> Hepatitis B virus

<400> 165

Asp Pro Arg Val Arg Gly Leu Tyr Leu Pro Ala Gly Gly  
 1 5 10

<210> 166  
 <211> 13  
 <212> PRT  
 <213> Hepatitis B virus

<400> 166

Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala Gly Gly  
 1 5 10

<210> 167  
 <211> 24  
 <212> PRT  
 <213> B. anthracis

<400> 167

Ile Val Thr Lys Glu Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp



1	5	10	15
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Thr Ser Thr Asn Gly Ile Glu Leu  
20

<210> 168  
 <211> 15  
 <212> PRT  
 <213> Hookworm

<400> 168

Ile Val Tyr Gln His Ser His Gly Glu Asp Arg Pro Gly Glu Leu  
 1 5 10 15

<210> 169  
 <211> 8  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> linker peptide

<400> 169

Gly Ser Gly Asp Gly Glu Gly Gly  
 1 5

<210> 170  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> flexible linker arm

<400> 170

Gly Gly Gly Gly Ser Gly Gly Gly Gly Thr  
 1 5 10

<210> 171  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Flexible linker arm sequence

<400> 171

Gly Gly Gly Gly Ser Gly Gly Gly Gly  
 1 5

<210> 172  
 <211> 7  
 <212> PRT  
 <213> Artificial sequence

<220>



<223> Flexible linker arm

<400> 172

Gly Ser Gly Asp Glu Gly Gly  
1 5

<210> 173

<211> 8

<212> PRT

<213> Artificial sequence

<220>

<223> Flexible linker arm

<400> 173

Gly Gly Gly Gly Ser Gly Gly Gly  
1 5

<210> 174

<211> 16

<212> PRT

<213> HIV

<400> 174

Gly Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Cys  
1 5 10 15

<210> 175

<211> 17

<212> PRT

<213> Corynebacterium diphtheriae

<400> 175

Phe Gln Val Val His Asn Ser Tyr Asn Arg Pro Ala Tyr Ser Pro Gly  
1 5 10 15

Cys

<210> 176

<211> 25

<212> PRT

<213> Borrelia burgdorferi

<400> 176

Val Glu Ile Lys Glu Gly Thr Val Thr Leu Lys Arg Glu Ile Asp Lys  
1 5 10 15

Asn Gly Lys Val Thr Val Ser Leu Cys  
20 25

<210> 177

<211> 19

<212> PRT



<213> Borrelia burgdorferi

<400> 177

Thr Leu Ser Lys Asn Ile Ser Lys Ser Gly Glu Val Ser Val Glu Leu  
1 5 10 15

Asn Asp Cys

<210> 178

<211> 11

<212> PRT

<213> Influenza A virus

<400> 178

Ser Ser Val Ser Ser Phe Glu Arg Phe Glu Cys  
1 5 10

<210> 179

<211> 10

<212> PRT

<213> Influenza A virus

<400> 179

Leu Ile Asp Ala Leu Leu Gly Asp Pro Cys  
1 5 10

<210> 180

<211> 9

<212> PRT

<213> Influenza A virus

<400> 180

Thr Leu Ile Asp Ala Leu Leu Gly Cys  
1 5

<210> 181

<211> 24

<212> PRT

<213> Influenza A virus

<400> 181

Phe Trp Arg Gly Glu Asn Gly Arg Lys Thr Arg Ser Ala Tyr Glu Arg  
1 5 10 15

Met Cys Asn Ile Leu Lys Gly Lys  
20

<210> 182

<211> 22

<212> PRT

<213> Influenza A virus

<400> 182



Leu Arg Val Leu Ser Phe Ile Arg Gly Thr Lys Val Ser Pro Arg Gly  
 1 5 10 15

Lys Leu Ser Thr Arg Gly  
 20

<210> 183  
 <211> 22  
 <212> PRT  
 <213> Influenza A virus

<400> 183

Ser Leu Val Gly Ile Asp Pro Phe Lys Leu Leu Gln Asn Ser Gln Val  
 1 5 10 15

Tyr Ser Leu Ile Arg Pro  
 20

<210> 184  
 <211> 24  
 <212> PRT  
 <213> Influenza A virus

<400> 184

Ala Val Lys Gly Val Gly Thr Met Val Met Glu Leu Ile Arg Met Ile  
 1 5 10 15

Lys Arg Gly Ile Asn Asp Arg Asn  
 20

<210> 185  
 <211> 21  
 <212> PRT  
 <213> Trypanosoma cruzi

<400> 185

Ser His Asn Phe Thr Leu Val Ala Ser Val Ile Ile Glu Glu Ala Pro  
 1 5 10 15

Ser Gly Asn Thr Cys  
 20

<210> 186  
 <211> 16  
 <212> PRT  
 <213> Plasmodium falciparum

<400> 186

Ser Val Gln Ile Pro Lys Val Pro Tyr Pro Asn Gly Ile Val Tyr Cys  
 1 5 10 15

<210> 187



<211> 16  
 <212> PRT  
 <213> Plasmodium falciparum

<400> 187

Asp Phe Asn His Tyr Tyr Thr Leu Lys Thr Gly Leu Glu Ala Asp Cys  
 1 5 10 15

<210> 188  
 <211> 18  
 <212> PRT  
 <213> Plasmodium falciparum

<400> 188

Pro Ser Asp Lys His Ile Glu Gln Tyr Lys Lys Ile Lys Asn Ser Ile  
 1 5 10 15

Ser Cys

<210> 189  
 <211> 20  
 <212> PRT  
 <213> Plasmodium falciparum

<400> 189

Glu Tyr Leu Asn Lys Ile Gln Asn Ser Leu Ser Thr Glu Trp Ser Pro  
 1 5 10 15

Cys Ser Val Thr  
 20

<210> 190  
 <211> 19  
 <212> PRT  
 <213> Plasmodium vivax

<400> 190

Tyr Leu Asp Lys Val Arg Ala Thr Val Gly Thr Glu Trp Thr Pro Cys  
 1 5 10 15

Ser Val Thr

<210> 191  
 <211> 20  
 <212> PRT  
 <213> Plasmodium yoelii

<400> 191

Glu Phe Val Lys Gln Ile Ser Ser Gln Leu Thr Glu Glu Trp Ser Gln  
 1 5 10 15



Cys Ser Val Thr  
20

<210> 192  
<211> 16  
<212> PRT  
<213> Streptococcus sobrinus

<400> 192

Lys Pro Arg Pro Ile Tyr Glu Ala Lys Leu Ala Gln Asn Gln Lys Cys  
1 5 10 15

<210> 193  
<211> 17  
<212> PRT  
<213> Streptococcus sobrinus

<400> 193

Ala Lys Ala Asp Tyr Glu Ala Lys Leu Ala Gln Tyr Glu Lys Asp Leu  
1 5 10 15

Cys

<210> 194  
<211> 16  
<212> PRT  
<213> Lymphocytic choriomeningitis virus

<400> 194

Arg Pro Gln Ala Ser Gly Val Tyr Met Gly Asn Leu Thr Ala Gln Cys  
1 5 10 15

<210> 195  
<211> 16  
<212> PRT  
<213> Clostridium tetani

<400> 195

Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu Cys  
1 5 10 15

<210> 196  
<211> 19  
<212> PRT  
<213> Neisseria meningitidis

<400> 196

Ala Ile Trp Gln Val Glu Gln Lys Ala Ser Ile Ala Gly Thr Asp Ser  
1 5 10 15

Gly Trp Cys



<210> 197  
<211> 19  
<212> PRT  
<213> Neisseria meningitidis

<400> 197

Asn Tyr Lys Asn Gly Gly Phe Phe Val Gln Tyr Gly Gly Ala Tyr Lys  
1 5 10 15

Arg His Cys

<210> 198  
<211> 19  
<212> PRT  
<213> Neisseria meningitidis

<400> 198

His Asn Ser Gln Thr Glu Val Ala Ala Thr Leu Ala Tyr Arg Phe Gly  
1 5 10 15

Asn Val Cys

<210> 199  
<211> 19  
<212> PRT  
<213> Neisseria meningitidis

<400> 199

Thr Pro Arg Val Ser Tyr Ala His Gly Phe Lys Gly Leu Val Asp Asp  
1 5 10 15

Ala Asp Cys

<210> 200  
<211> 19  
<212> PRT  
<213> Neisseria meningitidis

<400> 200

Arg Phe Gly Asn Ala Val Pro Arg Ile Ser Tyr Ala His Gly Phe Asp  
1 5 10 15

Phe Ile Cys

<210> 201  
<211> 19  
<212> PRT  
<213> Neisseria meningitidis



<400> 201

Ala Phe Lys Tyr Ala Arg His Ala Asn Val Gly Arg Asn Ala Phe Glu  
1 5 10 15

Leu Phe Cys

<210> 202

<211> 20

<212> PRT

<213> Neisseria meningitidis

<400> 202

Ser Gly Ala Trp Leu Lys Arg Asn Thr Gly Ile Gly Asn Tyr Thr Gln  
1 5 10 15

Ile Asn Ala Cys  
20

<210> 203

<211> 16

<212> PRT

<213> Neisseria meningitidis

<400> 203

Ala Gly Glu Phe Gly Thr Leu Arg Ala Gly Arg Val Ala Asn Gln Cys  
1 5 10 15

<210> 204

<211> 16

<212> PRT

<213> Neisseria meningitidis

<400> 204

Ile Gly Asn Tyr Thr Gln Ile Asn Ala Ala Ser Val Gly Leu Arg Cys  
1 5 10 15

<210> 205

<211> 16

<212> PRT

<213> Neisseria meningitidis

<400> 205

Gly Arg Asn Tyr Gln Leu Gln Leu Thr Glu Gln Pro Ser Arg Thr Cys  
1 5 10 15

<210> 206

<211> 16

<212> PRT

<213> Neisseria meningitidis

<400> 206

Ser Gly Ser Val Gln Phe Val Pro Ala Gln Asn Ser Lys Ser Ala Cys



1                      5                      10                      15  
  
 <210> 207  
 <211> 16  
 <212> PRT  
 <213> Neisseria meningitidis  
  
 <400> 207  
  
 His Ala Asn Val Gly Arg Asp Ala Phe Asn Leu Phe Leu Leu Gly Cys  
 1                      5                      10                      15  
  
 <210> 208  
 <211> 16  
 <212> PRT  
 <213> Neisseria meningitidis  
  
 <400> 208  
  
 Leu Gly Arg Ile Gly Asp Asp Asp Glu Ala Lys Gly Thr Asp Pro Cys  
 1                      5                      10                      15  
  
 <210> 209  
 <211> 16  
 <212> PRT  
 <213> Neisseria meningitidis  
  
 <400> 209  
  
 Ser Val Gln Phe Val Pro Ala Gln Asn Ser Lys Ser Ala Tyr Lys Cys  
 1                      5                      10                      15  
  
 <210> 210  
 <211> 16  
 <212> PRT  
 <213> Neisseria meningitidis  
  
 <400> 210  
  
 Asn Tyr Ala Phe Lys Tyr Ala Lys His Ala Asn Val Gly Arg Asp Cys  
 1                      5                      10                      15  
  
 <210> 211  
 <211> 16  
 <212> PRT  
 <213> Neisseria meningitidis  
  
 <400> 211  
  
 Ala His Gly Phe Asp Phe Ile Glu Arg Gly Lys Lys Gly Glu Asn Cys  
 1                      5                      10                      15  
  
 <210> 212  
 <211> 16  
 <212> PRT  
 <213> Neisseria meningitidis  
  
 <400> 212  
  
 Gly Val Asp Tyr Asp Phe Ser Lys Arg Thr Ser Ala Ile Val Ser Cys



1	5	10	15
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<210> 213  
 <211> 16  
 <212> PRT  
 <213> Neisseria meningitidis  
 <400> 213

His	Asp	Asp	Met	Pro	Val	Ser	Val	Arg	Tyr	Asp	Ser	Pro	Asp	Phe	Cys
1				5					10					15	

<210> 214  
 <211> 27  
 <212> PRT  
 <213> Neisseria meningitidis  
 <400> 214

Arg	Phe	Gly	Asn	Ala	Val	Pro	Arg	Ile	Ser	Tyr	Ala	His	Gly	Phe	Asp
1				5					10					15	

Phe Ile Glu Arg Gly Lys Lys Gly Glu Asn Cys  
 20 25

<210> 215  
 <211> 24  
 <212> PRT  
 <213> Neisseria meningitidis  
 <400> 215

Asn	Tyr	Ala	Phe	Lys	Tyr	Ala	Lys	His	Ala	Asn	Val	Gly	Arg	Asp	Ala
1				5					10					15	

Phe Asn Leu Phe Leu Leu Gly Cys  
 20

<210> 216  
 <211> 26  
 <212> PRT  
 <213> Neisseria meningitidis  
 <400> 216

Ser	Gly	Ala	Trp	Leu	Lys	Arg	Asn	Thr	Gly	Ile	Gly	Asn	Tyr	Thr	Gln
1				5					10					15	

Ile Asn Ala Ala Ser Val Gly Leu Arg Cys  
 20 25

<210> 217  
 <211> 20  
 <212> PRT  
 <213> Neisseria meningitidis  
 <400> 217



Ser Gly Ser Val Gln Phe Val Pro Ala Gln Asn Ser Lys Ser Ala Tyr  
1 5 10 15

Thr Pro Ala Cys  
20

<210> 218  
<211> 19  
<212> PRT  
<213> Neisseria meningitidis

<400> 218

Thr Gly Ala Asn Asn Thr Ser Thr Val Ser Asp Tyr Phe Arg Asn Arg  
1 5 10 15

Ile Thr Cys

<210> 219  
<211> 19  
<212> PRT  
<213> Neisseria meningitidis

<400> 219

Ile Tyr Asp Phe Lys Leu Asn Asp Lys Phe Asp Lys Phe Lys Pro Tyr  
1 5 10 15

Ile Gly Cys

<210> 220  
<211> 19  
<212> PRT  
<213> Neisseria meningitidis

<400> 220

Leu Ser Ala Ile Tyr Asp Phe Lys Leu Asn Asp Lys Phe Lys Pro Tyr  
1 5 10 15

Ile Gly Cys

<210> 221  
<211> 19  
<212> PRT  
<213> Neisseria meningitidis

<400> 221

Asn Gly Trp Tyr Ile Asn Pro Trp Ser Glu Val Lys Phe Asp Leu Asn  
1 5 10 15

Ser Arg Cys



<210> 222  
 <211> 20  
 <212> PRT  
 <213> Hepatitis B virus

<400> 222

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu  
 1 5 10 15

Ser Phe Leu Pro  
 20

<210> 223  
 <211> 24  
 <212> PRT  
 <213> Hepatitis B virus

<400> 223

Arg Asp Leu Leu Asp Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser  
 1 5 10 15

Pro Glu His Cys Ser Pro His His  
 20

<210> 224  
 <211> 25  
 <212> PRT  
 <213> Hepatitis B virus

<400> 224

Thr Trp Val Gly Val Asn Leu Glu Asp Pro Ala Ser Arg Asp Leu Val  
 1 5 10 15

Val Ser Tyr Val Asn Thr Asn Met Gly  
 20 25

<210> 225  
 <211> 16  
 <212> PRT  
 <213> Hepatitis B virus

<400> 225

Val Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys Phe Arg Gln Leu  
 1 5 10 15

<210> 226  
 <211> 21  
 <212> PRT  
 <213> Hepatitis B virus

<400> 226

Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg Glu Thr Val



1 5 10 15

Ile Glu Tyr Leu Val  
20

<210> 227  
<211> 32  
<212> PRT  
<213> Hepatitis B virus

<400> 227

Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Val Ser Phe Gly Val  
1 5 10 15

Trp Ile Arg Thr Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu  
20 25 30

<210> 228  
<211> 21  
<212> PRT  
<213> Hepatitis B virus

<400> 228

Val Ser Phe Gly Val Trp Ile Arg Thr Pro Pro Ala Tyr Arg Pro Pro  
1 5 10 15

Asn Ala Pro Ile Leu  
20

<210> 229  
<211> 12  
<212> PRT  
<213> Hepatitis B virus

<400> 229

Val Ser Phe Gly Val Trp Ile Arg Thr Pro Pro Ala  
1 5 10

<210> 230  
<211> 12  
<212> PRT  
<213> Hepatitis B virus

<400> 230

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu  
1 5 10

<210> 231  
<211> 12  
<212> PRT  
<213> Hepatitis B virus

<400> 231



Trp Ile Arg Thr Pro Pro Ala Tyr Arg Pro Pro Asn  
 1 5 10

<210> 232  
 <211> 20  
 <212> PRT  
 <213> Hepatitis B virus

<400> 232

Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu Leu  
 1 5 10 15

Met Thr Leu Ala  
 20

<210> 233  
 <211> 13  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> PADRE eptiope

<400> 233

Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala  
 1 5 10

<210> 234  
 <211> 549  
 <212> DNA  
 <213> Hepatitis B virus

<400> 234  
 atggacatcg acccttataa agaatttgga gctactgtgg agttactctc gtttttgcct  
 60

tctgacttct ttccttcagt acgagatctt ctagataccg cctcagctct gtatcgggaa  
 120

gccttagagt ctctgagca ttgttcacct caccatactg cactcaggca agcaattctt  
 180

tgctgggggg aactaatgac tctagctacc tgggtgggtg ttaatttgga agatccagcg  
 240

tctagagacc tagtagtcag ttatgtcaac actaatatgg gcctaaagtt caggcaactc  
 300

ttgtgggttc acatttcttg tctcactttt ggaagagaaa cagttataga gtatttggtg  
 360

tctttcggag tgtggattcg cactcctcca gcttatagac caccaaagtc ccctatccta  
 420

tcaacacttc cggagactac tggtgttaga cgacgaggca ggtcccctag aagaagaact  
 480

ccctcgccctc gcagacgaag gtctcaatcg ccgcgtcgca gaagatctca atctcgggaa  
 540



tctcaatgt  
549

<210> 235  
<211> 555  
<212> DNA  
<213> Hepatitis B virus

<400> 235  
atggacattg acccttataa agaatttgga gctactgtgg agttactctc gtttttgct  
60

tctgacttct ttccttccgt acgagatctc ctagacaccg cctcagctct gtatcgagaa  
120

gccttagagt ctctgagca ttgctcacct caccatactg cactcaggca agccattctc  
180

tgctgggggg aattgatgac tctagctacc tgggtgggta ataatttgca agatccagca  
240

tccagagatc tagtagtaa ttatgttaat actaacatgg gtttaaagat caggcaacta  
300

ttgtgggttc atatatcttg ccttactttt ggaagagaga ctgtacttga atatttggtc  
360

tctttcggag tgtggattcg cactcctcca gcctatagac caccaaagtc ccctatctta  
420

tcaacacttc cggaaactac tgttggtaga cgacgggacc gaggcaggtc ccctagaaga  
480

agaactccct cgcctcgcag acgcagatct caatcgccgc gtcgcagaag atctcaatct  
540

cgggaatctc aatgt  
555

<210> 236  
<211> 555  
<212> DNA  
<213> Hepatitis B virus

<400> 236  
atggacattg acccttataa agaatttgga gctactgtgg agttactctc gtttttgct  
60

tctgacttct ttccttccgt cagagatctc ctagacaccg cctcagctct gtatcgagaa  
120

gccttagagt ctctgagca ttgctcacct caccatactg cactcaggca agccattctc  
180

tgctgggggg aattgatgac tctagctacc tgggtgggta ataatttgga agatccagca  
240

tctagggatc ttgtagtaaa ttatgttaat actaacgtgg gtttaaagat caggcaacta  
300

ttgtgggttc atatatcttg ccttactttt ggaagagaga ctgtacttga atatttggtc  
360



tctttcggag tgtggattcg cactcctcca gcctatagac caccaaagtc ccctatctta  
420

tcaacacttc cggaaactac tgttggttaga cgacgggacc gaggcaggtc ccctagaaga  
480

agaactccct cgcctcgcag acgcagatct ccatcgccgc gtcgcagaag atctcaatct  
540

cggaatctc aatgt  
555

<210> 237  
<211> 549  
<212> DNA  
<213> Hepatitis B virus

<400> 237  
atggacattg acccttataa agaatttggg gctactgtgg agttactctc gtttttgcct  
60

tctgacttct ttccttccgt acgagatctt ctagataccg ccgcagctct gtatcgggat  
120

gccttagagt ctcttgagca ttgttcacct caccatactg cactcaggca agcaattctt  
180

tgctggggag acttaatgac tctagctacc tgggtgggta ctaatttaga agatccagca  
240

tctagggacc tagtagtcag ttatgtcaac actaatgtgg gcctaaagtt cagacaatta  
300

ttgtgggttc acatttcttg tctcactttt ggaagagaaa cggttctaga gtatttggtg  
360

tcttttggag tgtggattcg cactcctcca gcttatagac caccaaagtc ccctatctta  
420

tcaacgcttc cggagactac tgttggttaga cgacgaggca ggtcccctag aagaagaact  
480

ccctcgcttc gcagacgaag atctcaatcg ccgcgtcgca gaagatctca atctgggaa  
540

tctcaatgt  
549

<210> 238  
<211> 549  
<212> DNA  
<213> Woodchuck

<400> 238  
atggctttgg ggcattggaca tagatcctta taaagaattt ggttcactct atcagttggt  
60

gaattttctt cctttggact tctttcctga tcttaatgct ttgggtggaca ctgctactgc  
120

cttgatgaa gaagaactaa caggtagggg acattgctct ccgcaccata cagctattag  
180



acaagcttta gtatgctggg atgaattaac taaattgata gcttggatga gctctaacat  
240

aactttctgaa caagtaagaa caatcattgt aaatcatgtc aatgatacct ggggacttaa  
300

ggtgagacaa agtttatggg ttcatttgtc atgtctcact ttcggacaac atacagttca  
360

agaatttttta gtaagttttg gagtatggat caggactcca gctccatata gacctcctaa  
420

tgcacccatt ctctcgactc ttccggaaca tacagtcatt aggagaagag gaggtgcaag  
480

agctttctagg tccccagaa gacgcactcc ctctcctcgc aggagaagat ctcaatcacc  
540

gcgtcgcag  
549

<210> 239  
<211> 651  
<212> DNA  
<213> Ground squirrel

<400> 239  
atgtatcttt ttcacctgtg ccttggtttt gcctgtgttc catgtcctac tgttcaagcc  
60

tccaagctgt gccttggatg gctttgggac atggacatag atccctataa agaatttggg  
120

tcttcttata agttgttgaa ttttcttcct ttggactttt ttctgatct caatgcattg  
180

gtggacactg ctgctgctct ttatgaagaa gaattaacag gtagggagca ttgttctcct  
240

catcatactg ctattagaca ggccttagtg tgttgggaag aattaactag attaattaca  
300

tggatgagtg aaaatacaac agaagaagtt agaagaatta ttgttgatca tgtcaataat  
360

acttgggggac ttaaagtaag acagacttta tggtttcatt tatcatgtct tacttttggg  
420

caacacacag ttcaagaatt tttggttagt tttggagtat ggattagaac tccagctcct  
480

tatagaccac ctaatgcacc cattttatca actcttccgg aacatacagt cattaggaga  
540

agaggagggt caagagctgc taggtcccc cgaagacgca ctccctctcc tcgcaggaga  
600

aggtctcaat caccgcgtcg cagacgtct caatctccag cttccaactg c  
651

<210> 240  
<211> 18  
<212> DNA  
<213> Artificial sequence



<220>  
<223> primer

<400> 240  
ggtgcatgca aggagatg  
18

<210> 241  
<211> 55  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 241  
gcgaagcttc ggatcccatg gttttttcct ccttatgtga aattggtatc cgctc  
55

<210> 242  
<211> 24  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 242  
ttgggccatg gacatcgacc ctta  
24

<210> 243  
<211> 31  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 243  
cgcaagctta aacaacagta gtctccggaa g  
31

<210> 244  
<211> 43  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 244  
gtttctcttc caaaagtgag gctagaaatg tgaaaccaca aga  
43

<210> 245  
<211> 20  
<212> DNA  
<213> Artificial sequence



<220>  
<223> primer

<400> 245  
ctcacttttg gaagagaaac  
20

<210> 246  
<211> 39  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 246  
gagcgagta tggtgaggtg agctatgctc aggagactc  
39

<210> 247  
<211> 25  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 247  
gaggcgctca ggcaagcaat tcttt  
25

<210> 248  
<211> 35  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 248  
cgcaagctta ctagcaaaca acagtagtct cggaa  
35

<210> 249  
<211> 49  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 249  
gcgctcttcc aaaagtgagg ctagaaatgc aaaaccacaa gagttgcct  
49

<210> 250  
<211> 42  
<212> DNA  
<213> Artificial sequence

<220>



<223> primer

<400> 250

gcggggcccat attagtgttg caataactga ctactaggtc tc  
42

<210> 251

<211> 50

<212> DNA

<213> Artificial sequence

<220>

<223> primer

<400> 251

gcggctcgcc ccagcaaaga attgcttgtc tacacgcagt atggtgaggt  
50

<210> 252

<211> 27

<212> DNA

<213> Artificial sequence

<220>

<223> primer

<400> 252

ggggcgagct aatgactcta gctacct  
27

<210> 253

<211> 43

<212> DNA

<213> Artificial sequence

<220>

<223> primer

<400> 253

gcggctcgcc ccagcaaaga atgcattgcc tgagcgcagt atg  
43

<210> 254

<211> 20

<212> DNA

<213> Artificial sequence

<220>

<223> primer

<400> 254

ttagggcccat attagtgttg  
20

<210> 255

<211> 44

<212> DNA

<213> Artificial sequence

<220>

<223> primer



<400> 255  
gcggggccta aagttcaggc aatgcttggtg gtttcacatt tcta  
44

<210> 256  
<211> 31  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 256  
gcgccagggtg catagagtca ttagttcccc c  
31

<210> 257  
<211> 17  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 257  
ctacctgggt gggtggt  
17

<210> 258  
<211> 19  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 258  
tatgggccta aagttcagg  
19

<210> 259  
<211> 49  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 259  
gcggtcgcc gcagcaaaga attgcttggtc tgagcgcagt atggtgagg  
49

<210> 260  
<211> 33  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer



<400> 260  
gcggggccta aagtgcaggc aactcttggtg gtt  
33

<210> 261  
<211> 29  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 261  
gcgggctagct ggatcttcgc aattaacac  
29

<210> 262  
<211> 28  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 262  
gcgggctagct gcgacctagt agtcagtt  
28

<210> 263  
<211> 24  
<212> DNA  
<213> Hepatitis B virus

<400> 263  
ttggggccatg gacatcgacc ctta  
24

<210> 264  
<211> 31  
<212> DNA  
<213> Hepatitis B virus

<400> 264  
gcggaattcc atcttcctaaa ttaacaccca c  
31

<210> 265  
<211> 39  
<212> DNA  
<213> Hepatitis B virus

<400> 265  
cgcggaattca aaaagagctc ccagcgtcta gagacctag  
39

<210> 266  
<211> 31  
<212> DNA  
<213> Hepatitis B virus



<400> 266  
cgcaagctta aacaacagta gtctccggaa g  
31

<210> 267  
<211> 37  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease  
site

<400> 267  
cgcaagctta ctagcaaaca acagtagtct ccggaag  
37

<210> 268  
<211> 28  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease  
site

<400> 268  
ggaaagctta ctaacattga gattcccg  
28

<210> 269  
<211> 31  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 269  
gcggaattcc atcttccaaa ttaacaccca c  
31

<210> 270  
<211> 30  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 270  
gcggaattcc atcttcgcaa ttaacaccca  
30

<210> 271  
<211> 39  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer



<400> 271  
cggaattca aaaagagctc ccagcgtcta gagacctag  
39

<210> 272  
<211> 37  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 272  
gcgaattca aaaagagctc ccagctagct gcgacct  
37

<210> 273  
<211> 108  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 273  
aattctggat gcgaatttc gtcacgacag cggctatgag gtgcaccatc agaaactgg  
60  
  
tttctttgcc gaagatgtcg gttctaaca gggggcaatt atcgagct  
108

<210> 274  
<211> 72  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 274  
aattgtcacg aaagaaaata ctataattaa cccttctgag aatggtgaca cctccacgaa  
60  
  
cgggatcgag ct  
72

<210> 275  
<211> 45  
<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 275  
aattgtttat cagcattctc acggcgaaga tcgtccaggt gagct  
45

<210> 276  
<211> 78



<212> DNA  
<213> Artificial sequence

<220>  
<223> primer

<400> 276  
aatttctctg ttaaccgaag tggagacgcc gattcgtaac gaatggggta gccgctctaa  
60

tgatagctct gacgagct  
78

<210> 277  
<211> 12  
<212> PRT  
<213> Hepatitis B virus

<400> 277

Met Gly Cys Glu Leu Asp Pro Tyr Lys Glu Phe Gly  
1 5 10

<210> 278  
<211> 40  
<212> DNA  
<213> Artificial sequence

<220>  
<223> oligonucleotide

<400> 278  
gcgccatggg gtgtgagctc gacccttata aagaatttgg  
40

<210> 279  
<211> 12  
<212> PRT  
<213> Hepatitis B virus

<400> 279

Met Gly Cys Asp Ile Asp Pro Tyr Lys Glu Phe Gly  
1 5 10

<210> 280  
<211> 40  
<212> DNA  
<213> Artificial sequence

<220>  
<223> oligonucleotide

<400> 280  
gcgccatggg gtgtgacatc gacccttata aagaatttgg  
40

<210> 281  
<211> 42  
<212> DNA  
<213> Artificial Sequence



<220>  
<223> Amplification primer containing a restriction endonuclease site

<400> 281  
cgcaagctta gagctcttga attccaacaa cagtagtctc cg  
42

<210> 282  
<211> 28  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease site

<400> 282  
cgcgagctcc cagcgtctag agacctag  
28

<210> 283  
<211> 17  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease site

<400> 283  
gtatcaggct gaaaatc  
17

<210> 284  
<211> 19  
<212> PRT  
<213> Plasmodium falciparum

<400> 284

Ile Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn  
1 5 10 15

Pro Glu Leu

<210> 285  
<211> 57  
<212> DNA  
<213> Plasmodium falciparum

<400> 285  
aattaacgct aatccgaacg ctaatccgaa cgctaataccg aacgctaatac cggagct  
57

<210> 286  
<211> 49  
<212> DNA



<213> Plasmodium falciparum

<400> 286

ccggattagc gttcggatta gcgttcggat tagcgttcgg attagcgtt  
49

<210> 287

<211> 31

<212> PRT

<213> Plasmodium falciparum

<400> 287

Ile Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn  
1 5 10 15

Pro Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Glu Leu  
20 25 30

<210> 288

<211> 93

<212> DNA

<213> Plasmodium falciparum

<400> 288

aattaacgct aatccgaacg ttgacccgaa cgctaataccg aacgctaata cgaacgctaa  
60

tccgaacggt gacccgaacg ctaataccgga gct  
93

<210> 289

<211> 91

<212> DNA

<213> Plasmodium falciparum

<400> 289

ggagctccgg attagcgttc gggtaaacgt tcggattagc gttcggatta gcgttcggat  
60

tagcgttcgg gtcaacgttc ggattagcgt t  
91

<210> 290

<211> 23

<212> PRT

<213> Plasmodium falciparum

<400> 290

Ile Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn  
1 5 10 15

Pro Asn Ala Asn Pro Glu Leu  
20

<210> 291

<211> 69

<212> DNA



<213> Plasmodium falciparum

<400> 291

aattaacgcg aatccgaacg tggatccgaa tgccaaccct aacgccaacc caaatgcgaa  
60

cccagagct  
69

<210> 292

<211> 61

<212> DNA

<213> Plasmodium falciparum

<400> 292

ctgggttcgc atttgggttg gcgttagggg tggcattcgg atccacgttc ggattcgcgt  
60

t  
61

<210> 293

<211> 23

<212> PRT

<213> Plasmodium falciparum

<400> 293

Ile	Asn	Ala	Asn	Pro	Asn	Ala	Asn	Pro	Asn	Ala	Asn	Pro	Asn	Val	Asp
1				5				10						15	

Pro	Asn	Ala	Asn	Pro	Glu	Leu
			20			

<210> 294

<211> 69

<212> DNA

<213> Plasmodium falciparum

<400> 294

aattaacgcg aatccgaatg ccaaccctaa cgccaacca aacgtggatc cgaatgcgaa  
60

cccagagct  
69

<210> 295

<211> 61

<212> DNA

<213> Plasmodium falciparum

<400> 295

ctgggttcgc attcggatcc acgtttgggt tggcgtagg gttggcattc ggattcgcgt  
60

t  
61

<210> 296

<211> 31



<212> PRT  
<213> Plasmodium falciparum

<400> 296

Ile Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn  
1 5 10 15

Pro Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Glu Leu  
20 25 30

<210> 297  
<211> 93  
<212> DNA  
<213> Plasmodium falciparum

<400> 297  
aattaacgcg aatccgaacg tggatccaaa tgccaaccct aacgctaata caaacgccaa  
60

cccgaatggt gaccccaatg ccaatccgga gct  
93

<210> 298  
<211> 85  
<212> DNA  
<213> Plasmodium falciparum

<400> 298  
ccggattggc attgggggtca acattcgggt tggcgtttgg attagcgtaa gggttggcat  
60

ttggatccac gttcggattc gcggt  
85

<210> 299  
<211> 23  
<212> PRT  
<213> Plasmodium falciparum

<400> 299

Ile Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn  
1 5 10 15

Ala Asn Pro Asn Val Glu Leu  
20

<210> 300  
<211> 69  
<212> DNA  
<213> Plasmodium falciparum

<400> 300  
aattaatccg aacgtggatc caaatgccaa ccctaacgct aatccaaacg ccaacccgaa  
60

tgttgagct  
69



<210> 301  
<211> 61  
<212> DNA  
<213> Plasmodium falciparum

<400> 301  
caacattcgg gttggcggtt ggattagcgt taggggtggc atttggatcc acgttcggat  
60

t  
61

<210> 302  
<211> 25  
<212> PRT  
<213> Plasmodium falciparum

<400> 302

Ile Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn  
1 5 10 15

Ala Asn Pro Asn Val Asp Pro Glu Leu  
20 25

<210> 303  
<211> 75  
<212> DNA  
<213> Plasmodium falciparum

<400> 303  
aattaatccg aacgtggatc caaatgccaa ccctaacgct aatccaaacg ccaacccgaa  
60

tggtgaccct gagct  
75

<210> 304  
<211> 67  
<212> DNA  
<213> Plasmodium falciparum

<400> 304  
caggggtcaac attcgggttg gcgtttggat tagcgtagg gttggcattt ggatccacgt  
60

tcggatt  
67

<210> 305  
<211> 27  
<212> PRT  
<213> Plasmodium falciparum

<400> 305

Ile Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn  
1 5 10 15



Ala Asn Pro Asn Val Asp Pro Asn Ala Glu Leu  
 20 25

<210> 306  
 <211> 81  
 <212> DNA  
 <213> Plasmodium falciparum

<400> 306  
 aattaatccg aacgtggatc caaatgccaa ccctaacgct aatccaaacg ccaacccgaa  
 60

tgttgaccct aatgctgagc t  
 81

<210> 307  
 <211> 73  
 <212> DNA  
 <213> Plasmodium falciparum

<400> 307  
 cagcattagg gtcaacattc gggttggcgt ttggattagc gttagggttg gcatttggat  
 60

ccacgttcgg att  
 73

<210> 308  
 <211> 21  
 <212> PRT  
 <213> Plasmodium falciparum

<400> 308

Ile Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn  
 1 5 10 15

Pro Asn Val Glu Leu  
 20

<210> 309  
 <211> 63  
 <212> DNA  
 <213> Plasmodium falciparum

<400> 309  
 aattaacgtg gatccaaatg ccaaccctaa cgctaatacca aacgcccaacc cgaatgttga  
 60

gct  
 63

<210> 310  
 <211> 55  
 <212> DNA  
 <213> Plasmodium falciparum

<400> 310  
 caacattcgg gttggcgttt ggattagcgt tagggttggc atttggatcc acgtt  
 55



<210> 311  
<211> 23  
<212> PRT  
<213> Plasmodium falciparum

<400> 311

Ile Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn  
1 5 10 15

Pro Asn Val Asp Pro Glu Leu  
20

<210> 312  
<211> 69  
<212> DNA  
<213> Plasmodium falciparum

<400> 312  
aattaacgtg gatccaaatg ccaaccctaa cgctaattcca aacgccaacc cgaatggtga  
60

ccctgagct  
69

<210> 313  
<211> 61  
<212> DNA  
<213> Plasmodium falciparum

<400> 313  
caggggtcaac attcgggttg gcgtttggat tagcgttagg gttggcattt ggatccacgt  
60

t  
61

<210> 314  
<211> 25  
<212> PRT  
<213> Plasmodium falciparum

<400> 314

Ile Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn  
1 5 10 15

Pro Asn Val Asp Pro Asn Ala Glu Leu  
20 25

<210> 315  
<211> 75  
<212> DNA  
<213> Plasmodium falciparum

<400> 315  
aattaacgtg gatccaaatg ccaaccctaa cgctaattcca aacgccaacc cgaatggtga  
60



ccctaattgct gagct  
75

<210> 316  
<211> 67  
<212> DNA  
<213> Plasmodium falciparum

<400> 316  
cagcattagg gtcaacattc gggttggcgt ttggattagc gttagggttg gcatttggat  
60

ccacggtt  
67

<210> 317  
<211> 19  
<212> PRT  
<213> Plasmodium falciparum

<400> 317

Ile	Asp	Pro	Asn	Ala	Asn	Pro	Asn	Ala	Asn	Pro	Asn	Ala	Asn	Pro	Asn
1				5				10					15		

Val Glu Leu

<210> 318  
<211> 57  
<212> DNA  
<213> Plasmodium falciparum

<400> 318  
aattgatcca aatgccaacc ctaacgctaa tccaaacgcc aaccggaatg ttgagct  
57

<210> 319  
<211> 49  
<212> DNA  
<213> Plasmodium falciparum

<400> 319  
caacattcgg gttggcggtt ggattagcgt taggggttggc atttggatc  
49

<210> 320  
<211> 21  
<212> PRT  
<213> Plasmodium falciparum

<400> 320

Ile	Asp	Pro	Asn	Ala	Asn	Pro	Asn	Ala	Asn	Pro	Asn	Ala	Asn	Pro	Asn
1				5				10					15		

Val Asp Pro Glu Leu  
20



<210> 321  
<211> 63  
<212> DNA  
<213> Plasmodium falciparum

<400> 321  
aattgatcca aatgccaacc ctaacgctaa tccaaacgcc aaccggaatg ttgaccctga  
60  
  
gct  
63

<210> 322  
<211> 55  
<212> DNA  
<213> Plasmodium falciparum

<400> 322  
caggggtcaac attcgggttg gcgtttggat tagcgtagg gttggcattt ggatc  
55

<210> 323  
<211> 23  
<212> PRT  
<213> Plasmodium falciparum

<400> 323  
Ile Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn  
1 5 10 15

Val Asp Pro Asn Ala Glu Leu  
20

<210> 324  
<211> 69  
<212> DNA  
<213> Plasmodium falciparum

<400> 324  
aattgatcca aatgccaacc ctaacgctaa tccaaacgcc aaccggaatg ttgaccctaa  
60  
  
tgccgagct  
69

<210> 325  
<211> 61  
<212> DNA  
<213> Plasmodium falciparum

<400> 325  
cggcattagg gtcaacattc gggttggcgt ttggattagc gttagggttg gcatttggat  
60  
  
c  
61



<210> 326  
 <211> 21  
 <212> PRT  
 <213> Plasmodium falciparum

<400> 326

Ile Glu Tyr Leu Asn Lys Ile Gln Asn Ser Leu Ser Thr Glu Trp Ser  
 1 5 10 15

Pro Cys Ser Val Thr  
 20

<210> 327  
 <211> 69  
 <212> DNA  
 <213> Plasmodium falciparum

<400> 327  
 aattgaatat ctgaacaaaa tccagaactc tctgtccacc gaatggtctc cgtgctccgt  
 60

tacctagta  
 69

<210> 328  
 <211> 69  
 <212> DNA  
 <213> Plasmodium falciparum

<400> 328  
 agcttactag gtaacggagc acggagacaa ttcgggtggac agagagttct ggattttggt  
 60

cagatatattc  
 69

<210> 329  
 <211> 24  
 <212> PRT  
 <213> Plasmodium vivax

<400> 329

Ile Pro Ala Gly Asp Arg Ala Asp Gly Gln Pro Ala Gly Asp Arg Ala  
 1 5 10 15

Ala Gly Gln Pro Ala Gly Glu Leu  
 20

<210> 330  
 <211> 72  
 <212> DNA  
 <213> Plasmodium vivax

<400> 330  
 aattccgggt ggtgaccgtg cagatggcca gccagcgggt gaccgcgctg caggccagcc  
 60



ggctggcgag ct  
72

<210> 331  
<211> 64  
<212> DNA  
<213> Plasmodium vivax

<400> 331  
cgccagccgg ctggcctgca gcgcgggtcac ccgctggctg gccatctgca cggtcaccag  
60

ccgg  
64

<210> 332  
<211> 21  
<212> PRT  
<213> Plasmodium vivax

<400> 332

Ile Asp Arg Ala Ala Gly Gln Pro Ala Gly Asp Arg Ala Asp Gly Gln  
1 5 10 15

Pro Ala Gly Glu Leu  
20

<210> 333  
<211> 63  
<212> DNA  
<213> Plasmodium vivax

<400> 333  
aattgacaga gcagccggac aaccagcagg cgatcgagca gacggacagc ccgcagggga  
60

gct  
63

<210> 334  
<211> 55  
<212> DNA  
<213> Plasmodium vivax

<400> 334  
cccctgcggg ctgtccgtct gctcgatcgc ctgctggttg tccggctgct ctgtc  
55

<210> 335  
<211> 21  
<212> PRT  
<213> Plasmodium vivax

<400> 335

Ile Ala Asn Gly Ala Gly Asn Gln Pro Gly Ala Asn Gly Ala Gly Asp  
1 5 10 15



Gln Pro Gly Glu Leu  
20

<210> 336  
<211> 63  
<212> DNA  
<213> Plasmodium vivax

<400> 336  
aattgcgaac ggcgccgta atcagccggg ggcaaacggc gcgggtgatc aaccagggga  
60

gct  
63

<210> 337  
<211> 55  
<212> DNA  
<213> Plasmodium vivax

<400> 337  
cccctggttg atcacccgcg ccgtttgccc ccggttgatt accggcgccg ttcgc  
55

<210> 338  
<211> 21  
<212> PRT  
<213> Plasmodium vivax

<400> 338

Ile	Ala	Asn	Gly	Ala	Asp	Asn	Gln	Pro	Gly	Ala	Asn	Gly	Ala	Asp	Asp
1				5					10					15	

Gln Pro Gly Glu Leu  
20

<210> 339  
<211> 63  
<212> DNA  
<213> Plasmodium vivax

<400> 339  
aattgcgaac ggcgccgata atcagccggg tgcaaacggg gcggatgacc aaccaggcga  
60

gct  
63

<210> 340  
<211> 55  
<212> DNA  
<213> Plasmodium vivax

<400> 340  
cgccctggttg gtcacccgcc ccgtttgcac ccggttgatt atcggcgccg ttcgc  
55

<210> 341



<211> 39  
 <212> PRT  
 <213> Plasmodium vivax

<400> 341

Ile Ala Asn Gly Ala Gly Asn Gln Pro Gly Ala Asn Gly Ala Gly Asp  
 1 5 10 15

Gln Pro Gly Ala Asn Gly Ala Asp Asn Gln Pro Gly Ala Asn Gly Ala  
 20 25 30

Asp Asp Gln Pro Gly Glu Leu  
 35

<210> 342  
 <211> 117  
 <212> DNA  
 <213> Plasmodium vivax

<400> 342  
 aattgcgaac ggcgccgcta atcagccggg agcaaacggc gcgggggatc aaccaggcgc  
 60

caatggtgca gacaaccagc ctggggcgaa tggagccgat gaccaaccgc gcgagct  
 117

<210> 343  
 <211> 109  
 <212> DNA  
 <213> Plasmodium vivax

<400> 343  
 cgccgggttg gtcateggct ccattcgccc caggctgggt gtctgcacca ttggcgctg  
 60

gttgatcccc cgcgccgttt gctcccggct gattaccggc gccgttcgc  
 109

<210> 344  
 <211> 25  
 <212> PRT  
 <213> Plasmodium vivax

<400> 344

Ile Ala Pro Gly Ala Asn Gln Glu Gly Gly Ala Ala Ala Pro Gly Ala  
 1 5 10 15

Asn Gln Glu Gly Gly Ala Ala Glu Leu  
 20 25

<210> 345  
 <211> 75  
 <212> DNA  
 <213> Plasmodium vivax

<400> 345



aattgcgccg ggcgccaacc aggaaggtgg ggctgcagcg ccaggagcca atcaagaagg  
60

cggtgcagcg gagct  
75

<210> 346  
<211> 67  
<212> DNA  
<213> Plasmodium vivax

<400> 346  
ccgctgcacc gccttcttga ttggctcctg gcgctgcagc cccaccttcc tggttggcgc  
60

ccggcgc  
67

<210> 347  
<211> 26  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease  
site

<400> 347

Ile	Ser	Leu	Leu	Thr	Glu	Val	Glu	Thr	Pro	Ile	Arg	Asn	Glu	Trp	Gly
1				5					10					15	

Cys	Arg	Cys	Asn	Asp	Ser	Ser	Asp	Glu	Leu
			20					25	

<210> 348  
<211> 78  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease  
site

<400> 348  
aattagcctg ttaaccgaag tggagacgcc gatccgtaac gaatggggct gccgctgtaa  
60

tgattcttcc gacgagct  
78

<210> 349  
<211> 70  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease  
site

<400> 349



cgctcggaaga atcattacag cggcagcccc attcgttacg gatcggcgctc tccacttcgg  
60

ttaacaggct  
70

<210> 350  
<211> 26  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease  
site

<400> 350

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu  
20 25

<210> 351  
<211> 78  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease  
site

<400> 351  
catgtctctg ctgaccgaag ttgaaacccc tadcagaaac gaatgggggt gcagatgtaa  
60

cgattcaagt gatgagct  
78

<210> 352  
<211> 70  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease  
site

<400> 352  
catcacttga atcgttacat ctgcaccccc attcgtttct gatagggggt tcaacttcgg  
60

tcagcagaga  
70

<210> 353  
<211> 26  
<212> PRT  
<213> Artificial Sequence

<220>



<223> Amplification primer containing a restriction endonuclease site

<400> 353

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
1 5 10 15

Ser Arg Cys Asn Asp Ser Ser Asp Glu Leu  
20 25

<210> 354

<211> 78

<212> DNA

<213> Artificial Sequence

<220>

<223> Amplification primer containing a restriction endonuclease site

<400> 354

catgtctctg ctgaccgaag ttgaaacccc tatcagaaac gaatgggggt ctagatgtaa  
60

cgattcaagt gatgagct  
78

<210> 355

<211> 70

<212> DNA

<213> Artificial Sequence

<220>

<223> Amplification primer containing a restriction endonuclease site

<400> 355

catcacttga atcgttacat ctgaccccc attcgtttct gatagggggt tcaacttcgg  
60

tcagcagaga  
70

<210> 356

<211> 26

<212> PRT

<213> Artificial Sequence

<220>

<223> Amplification primer containing a restriction endonuclease site

<400> 356

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
1 5 10 15

Cys Arg Ser Asn Asp Ser Ser Asp Glu Leu  
20 25



<210> 357  
<211> 78  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease site

<400> 357  
catgtctctg ctgaccgaag ttgaaacccc tatcagaaac gaatgggggt gcagatcgaa  
60  
  
cgattcaagt gatgagct  
78

<210> 358  
<211> 70  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease site

<400> 358  
catcacttga atcgttcgat ctgcaccccc attcgtttct gatagggggt tcaacttcgg  
60  
  
tcagcagaga  
70

<210> 359  
<211> 26  
<212> PRT  
<213> Influenza A virus

<400> 359

Ile	Ser	Leu	Leu	Thr	Glu	Val	Glu	Thr	Pro	Ile	Arg	Asn	Glu	Trp	Gly
1				5				10						15	

Ser	Arg	Ser	Asn	Asp	Ser	Ser	Asp	Glu	Leu
			20					25	

<210> 360  
<211> 78  
<212> DNA  
<213> Influenza A virus

<400> 360  
aatttctctg ttaaccgaag tggagacgcc gattcgtaac gaatggggta gccgctctaa  
60  
  
tgatagctct gacgagct  
78

<210> 361  
<211> 70  
<212> DNA  
<213> Influenza A virus



<400> 361  
cgtcagagct atcattagag cggctacccc attcggttacg aatcggcgtc tccacttcgg  
60

ttaacagaga  
70

<210> 362  
<211> 26  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease  
site

<400> 362

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
1 5 10 15

Ser Arg Ser Asn Asp Ser Ser Asp Glu Leu  
20 25

<210> 363  
<211> 78  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease  
site

<400> 363  
catgtctctg ctgaccgaag ttgaaacccc tatcagaaac gaatgggggt ctagatcgaa  
60

cgattcaagt gatgagct  
78

<210> 364  
<211> 70  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease  
site

<400> 364  
catcacttga atcgttcgat ctgacccccc attcgtttct gatagggggt tcaacttcgg  
60

tcagcagaga  
70

<210> 365  
<211> 21  
<212> DNA  
<213> Artificial Sequence



<220>  
<223> Amplification primer containing a restriction endonuclease site

<400> 365  
gcgggatccg gagcttatcg a  
21

<210> 366  
<211> 24  
<212> PRT  
<213> Artificial sequence

<220>  
<223> Amplification primer containing a restriction site

<400> 366

Gly Cys Gly Cys Thr Cys Gly Ala Gly Ala Thr Cys Ala Cys Thr Thr  
1 5 10 15

Gly Ala Ala Thr Cys Gly Thr Thr  
20

<210> 367  
<211> 33  
<212> DNA  
<213> Artificial sequence

<220>  
<223> Amplification primer containing a restriction site

<400> 367  
gcgctcgaga gcttattgac cgaagttgaa acc  
33

<210> 368  
<211> 24  
<212> DNA  
<213> Artificial sequence

<220>  
<223> Amplification primer containing restriction site

<400> 368  
gcgctgcaga tcacttgaat cggt  
24

<210> 369  
<211> 25  
<212> DNA  
<213> Artificial sequence

<220>  
<223> Amplification primer containing a restriction site

<400> 369  
gcgctgcagt ctctgctgac cgaag  
25



<210> 370  
 <211> 22  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Amplification primer containing a restriction endonuclease site  
  
 <400> 370  
 cgcgacatgt ctctgctgac cg  
 22  
  
 <210> 371  
 <211> 31  
 <212> DNA  
 <213> Artificial sequence  
  
 <220>  
 <223> oligonucleotide  
  
 <400> 371  
 cgcaagctta aacaacagta gtctccggaa g  
 31  
  
 <210> 372  
 <211> 52  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Amplification primer containing a restriction endonuclease site  
  
 <400> 372  
 gcgaagctta ctaaggggag cggcctcgtc gacgaacaac agtagtctcc gg  
 52  
  
 <210> 373  
 <211> 55  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Amplification primer containing a restriction endonuclease site  
  
 <400> 373  
 gcgaagctta ctaacaaggg gagcggcctc gtcgacgaac aacagtagtc tccgg  
 55  
  
 <210> 374  
 <211> 49  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Amplification primer containing a restriction endonuclease site  
  
 <400> 374



gcgaagctta ctaaggcgag ggagtgcgcc gacgagggga gcggcctcg  
49

<210> 375  
<211> 52  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease  
site

<400> 375  
gcgaagctta ctaacaaggc gagggagtgc gccgacgagg ggagcggcct cg  
52

<210> 376  
<211> 49  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease  
site

<400> 376  
gcgaagctta ctacggcgat tgagagcgtc gacggcgagg cgagggagt  
49

<210> 377  
<211> 52  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease  
site

<400> 377  
gcgaagctta ctaacacggc gattgagagc gtcgacggcg aggcgaggga gt  
52

<210> 378  
<211> 66  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Amplification primer containing a restriction endonuclease  
site

<400> 378  
gcgaagctta ctaacattga gattcccgag attgagatcg ccggcgacgc ggcgattgag  
60

agcgtc  
66

<210> 379  
<211> 32  
<212> DNA



<213> Artificial Sequence

<220>

<223> Amplification primer containing a restriction endonuclease site

<400> 379

gcgaagctta ctattgagat tcccgagatt ga  
32

<210> 380

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Amplification primer containing a restriction endonuclease site

<400> 380

ggaaagctta ctaacattga gattcccg  
28

<210> 381

<211> 35

<212> PRT

<213> Hepatitis B virus

<400> 381

Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro Arg  
1 5 10 15

Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser Gln Ser Arg Glu  
20 25 30

Ser Gln Cys  
35

<210> 382

<211> 34

<212> PRT

<213> Hepatitis B virus

<400> 382

Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro Arg  
1 5 10 15

Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser Gln Ser Arg Glu  
20 25 30

Ser Gln

<210> 383

<211> 24

<212> PRT



<213> Hepatitis B virus

<400> 383

Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro Arg  
1 5 10 15

Arg Arg Arg Ser Gln Ser Pro Cys  
20

<210> 384

<211> 23

<212> PRT

<213> Hepatitis B virus

<400> 384

Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro Arg  
1 5 10 15

Arg Arg Arg Ser Gln Ser Pro  
20

<210> 385

<211> 16

<212> PRT

<213> Hepatitis B virus

<400> 385

Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro Cys  
1 5 10 15

<210> 386

<211> 15

<212> PRT

<213> Hepatitis B virus

<400> 386

Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro  
1 5 10 15

<210> 387

<211> 9

<212> PRT

<213> Hepatitis B virus

<400> 387

Val Arg Arg Arg Gly Arg Ser Pro Cys  
1 5

<210> 388

<211> 8

<212> PRT

<213> Hepatitis B virus

<400> 388



Val Arg Arg Arg Gly Arg Ser Pro  
1 5

<210> 389  
<211> 203  
<212> PRT  
<213> Hepatitis B virus

<400> 389

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp Pro Tyr Lys Glu Phe Gly Ala Thr  
20 25 30

Val Glu Leu Leu Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg  
35 40 45

Asp Leu Leu Asp Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser  
50 55 60

Pro Glu His Cys Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu  
65 70 75 80

Cys Trp Gly Glu Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu  
85 90 95

Glu Asp Pro Ala Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn  
100 105 110

Met Gly Leu Lys Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu  
115 120 125

Thr Phe Gly Arg Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val  
130 135 140

Trp Ile Arg Thr Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu  
145 150 155 160

Ser Thr Leu Pro Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro  
165 170 175

Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg  
180 185 190

Arg Arg Arg Ser Gln Ser Arg Glu Ser Gln Cys  
195 200

<210> 390  
<211> 176



<212> PRT  
<213> Artificial sequence

<220>  
<223> Influenza-Hepatitis B chimera

<400> 390

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu  
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp  
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys  
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu  
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp Gly Ile  
65 70 75 80

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys  
85 90 95

Arg Cys Asn Asp Ser Ser Asp Glu Leu Pro Ala Ser Arg Asp Leu Val  
100 105 110

Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys Phe Arg Gln Leu Leu  
115 120 125

Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg Glu Thr Val Ile Glu  
130 135 140

Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro Pro Ala Tyr Arg  
145 150 155 160

Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu Thr Thr Val Val  
165 170 175

<210> 391  
<211> 177  
<212> PRT  
<213> Artificial sequence

<220>  
<223> Influenza-Heoatitis B mutant chimera

<400> 391

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu  
1 5 10 15



Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp  
                   20                                  25                                  30  
 Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys  
                   35                                  40                                  45  
 Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu  
                   50                                  55                                  60  
 Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp Gly Ile  
                   65                                  70                                  75                                  80  
 Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ala  
                                   85                                  90                                  95  
 Arg Ala Asn Asp Ser Ser Asp Glu Leu Pro Ala Ser Arg Asp Leu Val  
                                  100                                 105                                 110  
 Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys Phe Arg Gln Leu Leu  
                  115                                 120                                 125  
 Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg Glu Thr Val Ile Glu  
                  130                                 135                                 140  
 Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro Pro Ala Tyr Arg  
                  145                                 150                                 155                                 160  
 Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu Thr Thr Val Val  
                                  165                                 170                                 175

Cys

<210> 392  
 <211> 183  
 <212> PRT  
 <213> Hepatitis B virus

<400> 392

Met Gly Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu  
 1                  5                                  10                                  15  
 Trp Gly Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu Leu Gly Trp Leu  
                   20                                  25                                  30  
 Trp Gly Ile Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu  
                   35                                  40                                  45  
 Leu Leu Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu  
                   50                                  55                                  60



Leu Asp Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu  
65 70 75 80

His Cys Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp  
85 90 95

Gly Glu Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp  
100 105 110

Pro Ala Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly  
115 120 125

Leu Lys Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe  
130 135 140

Gly Arg Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile  
145 150 155 160

Arg Thr Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr  
165 170 175

Leu Pro Glu Thr Thr Val Val  
180

<210> 393  
<211> 184  
<212> PRT  
<213> Hepatitis B virus

<400> 393

Met Gly Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu  
1 5 10 15

Trp Gly Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu Leu Gly Trp Leu  
20 25 30

Trp Gly Ile Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu  
35 40 45

Leu Leu Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu  
50 55 60

Leu Asp Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu  
65 70 75 80

His Cys Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp  
85 90 95

Gly Glu Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp  
100 105 110



Pro Ala Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly  
115 120 125

Leu Lys Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe  
130 135 140

Gly Arg Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile  
145 150 155 160

Arg Thr Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr  
165 170 175

Leu Pro Glu Thr Thr Val Val Cys  
180

<210> 394

<211> 18

<212> PRT

<213> Artificial Sequence

<220>

<223> Amplification primer containing a restriction endonuclease site.

<400> 394

Met Gly Ser Arg Cys Asn Asp Ser Ser Asp Ile Asp Pro Tyr Lys Glu  
1 5 10 15

Phe Gly

<210> 395

<211> 59

<212> DNA

<213> Artificial Sequence

<220>

<223> Amplification primer containing a restriction endonuclease site.

<400> 395

ggcgccatgg ggtctagatg taacgattca agtgacatcg acccttataa agaatttcg  
59

<210> 396

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Amplification primer containing a restriction endonuclease site.

<400> 396



Met Gly Cys Asn Asp Ser Ser Asp Ile Asp Pro Tyr Lys Glu Phe Gly  
 1 5 10 15

<210> 397  
 <211> 52  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Amplification primer containing a restriction endonuclease site.

<400> 397  
 gcgccatggg gtgtaacgat tcaagtgaca tcgaccctta taaagaattt gg  
 52

<210> 398  
 <211> 11  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> Hbc precore alternative linker

<400> 398

Glu Leu Leu Gly Trp Leu Trp Gly Ile Asp Ile  
 1 5 10

<210> 399  
 <211> 14  
 <212> PRT  
 <213> Hepatitis B virus

<400> 399

Ser Lys Leu Cys Leu Gly Trp Leu Trp Gly Met Asp Ile Asp  
 1 5 10

<210> 400  
 <211> 38  
 <212> PRT  
 <213> Hepatitis B virus

<400> 400

Met Gly Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu  
 1 5 10 15

Trp Gly Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu Leu Gly Trp Leu  
 20 25 30

Trp Gly Ile Asp Ile Asp  
 35

<210> 401  
 <211> 24  
 <212> PRT  
 <213> Hepatitis B virus



<400> 401

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp  
20

<210> 402

<211> 27

<212> PRT

<213> Hepatitis B virus

<400> 402

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu Asp  
20 25

<210> 403

<211> 27

<212> PRT

<213> Hepatitis B virus

<400> 403

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
1 5 10 15

Ser Arg Ser Asn Asp Ser Ser Asp Glu Leu Asp  
20 25

<210> 404

<211> 27

<212> PRT

<213> Artificial sequence

<220>

<223> Chimera of Hepatitis B virus and Influenza A virus

<400> 404

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
1 5 10 15

Ser Arg Cys Asn Asp Ser Ser Asp Glu Leu Asp  
20 25

<210> 405

<211> 27

<212> PRT

<213> Artificial sequence

<220>

<223> Chimera of Hepatitis B and Influenza A viruses



<400> 405

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
1 5 10 15

Cys Arg Ser Asn Asp Ser Ser Asp Glu Leu Asp  
20 25

<210> 406

<211> 52

<212> PRT

<213> Artificial sequence

<220>

<223> Chimera of Hepatitis B and Influenza A viruses

<400> 406

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp Leu Glu Ser Leu Leu Thr Glu Val  
20 25 30

Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys Arg Cys Asn Asp Ser Ser  
35 40 45

Asp Glu Leu Asp  
50

<210> 407

<211> 52

<212> PRT

<213> Artificial sequence

<220>

<223> Chimera of Hepatitis B and Influenza A viruses

<400> 407

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
1 5 10 15

Ser Arg Ser Asn Asp Ser Ser Asp Leu Glu Ser Leu Leu Thr Glu Val  
20 25 30

Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys Arg Cys Asn Asp Ser Ser  
35 40 45

Asp Glu Leu Asp  
50

<210> 408

<211> 77

<212> PRT



<213> Artificial sequence

<220>

<223> Chimera of Hepatitis B and Influenza A viruses

<400> 408

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
1 5 10 15

Ser Arg Ser Asn Asp Ser Ser Asp Leu Gln Ser Leu Leu Thr Glu Val  
20 25 30

Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser Arg Ser Asn Asp Ser Ser  
35 40 45

Asp Leu Glu Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu  
50 55 60

Trp Gly Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu Asp  
65 70 75

<210> 409

<211> 6

<212> PRT

<213> Influenza virus

<400> 409

Met Leu Glu Pro Phe Gln  
1 5

<210> 410

<211> 6

<212> PRT

<213> Influenza virus

<400> 410

Met Leu Glu Pro Leu Gln  
1 5

<210> 411

<211> 6

<212> PRT

<213> Artificial sequence

<220>

<223> primer protein seugence

<400> 411

Met Asp Ile Asp Pro Tyr  
1 5

<210> 412

<211> 7

<212> PRT



<213> Artificial sequence

<220>

<223> protein primer

<400> 412

Val Val Thr Thr Glu Pro Leu  
1 5

<210> 413

<211> 15

<212> PRT

<213> Artificial sequence

<220>

<223> primer protein sequence

<400> 413

Thr Glu Arg Gly Phe Thr Leu Ser Ser Ile His Phe Trp Leu Leu  
1 5 10 15

<210> 414

<211> 7

<212> PRT

<213> Artificial sequence

<220>

<223> protein primer

<400> 414

Leu Thr Phe Gly Arg Glu Thr  
1 5

<210> 415

<211> 13

<212> PRT

<213> Artificial sequence

<220>

<223> protein primer

<400> 415

Leu Ala Thr His His Pro Ser Ser His Glu Pro Ser Glu  
1 5 10

<210> 416

<211> 7

<212> PRT

<213> Artificial sequence

<220>

<223> protein

<400> 416

Ala Leu Arg Gln Ala Ile Leu  
1 5



<210> 417  
<211> 7  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein sequence

<400> 417

Cys Val Val Thr Thr Glu Pro  
1 5

<210> 418  
<211> 15  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein

<400> 418

Arg Gly Phe Thr Leu Ser Ser Ile Cys Phe Trp Leu Leu Gln Arg  
1 5 10 15

<210> 419  
<211> 12  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein primer

<400> 419

Gly Met Asn Thr Asn Cys Tyr Ser Val Val Leu Asp  
1 5 10

<210> 420  
<211> 15  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein primer

<400> 420

Glu Gly Trp Cys Leu Ile Ala Gln Arg Cys Ala Thr His His Pro  
1 5 10 15

<210> 421  
<211> 9  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein primer

<400> 421



Trp Gly Glu Leu Met Thr Leu Ala Thr  
1 5

<210> 422  
<211> 13  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein primer

<400> 422

Glu Gly Trp Cys Leu Ile Cys Gln Arg Leu Ala Thr His  
1 5 10

<210> 423  
<211> 6  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein primer

<400> 423

Leu Gly Met Asn Thr Asn  
1 5

<210> 424  
<211> 13  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein primer

<400> 424

Gly Leu Lys Phe Arg Gln Cys Leu Trp Phe His Ile Ser  
1 5 10

<210> 425  
<211> 9  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein primer

<400> 425

Trp Thr Cys Leu Thr Met Leu Glu Gly  
1 5

<210> 426  
<211> 6  
<212> PRT  
<213> Artificial sequence



<220>  
<223> primer protein sequence

<400> 426

Ala Thr Trp Val Gly Val  
1 5

<210> 427  
<211> 6  
<212> PRT  
<213> Artificial sequence

<220>  
<223> primer protein sequence

<400> 427

Met Gly Leu Lys Phe Arg  
1 5

<210> 428  
<211> 15  
<212> PRT  
<213> Artificial sequence

<220>  
<223> primer protein sequence

<400> 428

Glu Gly Cys Cys Leu Ile Ala Gln Arg Leu Ala Thr His His Pro  
1 5 10 15

<210> 429  
<211> 14  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein primer sequence

<400> 429

Gly Leu Lys Cys Arg Gln Leu Leu Trp Phe Ser Ala Pro Asp  
1 5 10

<210> 430  
<211> 10  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein primer sequence

<400> 430

Ser Ala Pro Asp Asp Glu Cys Asn Val Gly  
1 5 10

<210> 431



<211> 8  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein primer sequence

<400> 431

Ala Ser Cys Asp Leu Val Val Ser  
1 5

<210> 432  
<211> 9  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein primer sequence

<400> 432

Ile Gly Asp Glu Leu Asn Val Gly Val  
1 5

<210> 433  
<211> 9  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein primer sequence

<400> 433

Ile Gly Asp Glu Cys Asn Val Gly Val  
1 5

<210> 434  
<211> 12  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein primer sequence

<400> 434

Gly Ile Gln Lys Glu Leu Pro Ala Ser Arg Asp Leu  
1 5 10

<210> 435  
<211> 12  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein primer sequence

<400> 435

Gly Ile Gln Lys Glu Leu Pro Ala Ser Cys Asp Leu



1 5 10

<210> 436  
<211> 36  
<212> PRT  
<213> Artificial sequence

<220>  
<223> primer protein sequence

<400> 436

Ile Leu Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val His His  
1 5 10 15

Gln Lys Leu Val Phe Phe Ala Glu Asp Val Gly Ser Asn Lys Gly Ala  
20 25 30

Ile Ile Glu Leu  
35

<210> 437  
<211> 24  
<212> PRT  
<213> Artificial sequence

<220>  
<223> primer protein sequence

<400> 437

Ile Val Thr Lys Glu Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp  
1 5 10 15

Thr Ser Thr Asn Gly Ile Glu Leu  
20

<210> 438  
<211> 15  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein primer sequence

<400> 438

Ile Val Tyr Gln His Ser His Gly Glu Asp Arg Pro Gly Glu Leu  
1 5 10 15

<210> 439  
<211> 26  
<212> PRT  
<213> Artificial sequence

<220>  
<223> protein primer sequence

<400> 439







<220>  
 <223> primer  
  
 <400> 444  
 gccttagagt ctcctgagca ttgttcacct caccatactg c  
 41  
  
 <210> 445  
 <211> 41  
 <212> DNA  
 <213> Artificial sequence  
  
 <220>  
 <223> primer  
  
 <400> 445  
 gcagtatggg gaggtgaaga atgctcagga gactctaagg c  
 41  
  
 <210> 446  
 <211> 44  
 <212> DNA  
 <213> Artificial sequence  
  
 <220>  
 <223> primer  
  
 <400> 446  
 ggcaactcct gtggtttcac atttcttgct tcattttgga agag  
 44  
  
 <210> 447  
 <211> 45  
 <212> DNA  
 <213> Artificial sequence  
  
 <220>  
 <223> primer  
  
 <400> 447  
 ctctttccaaa agtgagagaa gaaatgtgaa accacaagag ttgcc  
 45  
  
 <210> 448  
 <211> 42  
 <212> DNA  
 <213> Artificial sequence  
  
 <220>  
 <223> primer  
  
 <400> 448  
 cctgggtggg tgtaatttg aaagaagatc cagcgtctag ag  
 42  
  
 <210> 449  
 <211> 42  
 <212> DNA  
 <213> Artificial sequence  
  
 <220>



<223> primer

<400> 449

ctctagacgc tggatcttct ttcaaattaa caccaccca gg  
42

<210> 450

<211> 24

<212> PRT

<213> Artificial sequence

<220>

<223> peptide conjugate sequence

<400> 450

Met	Ser	Leu	Leu	Thr	Glu	Val	Glu	Thr	Pro	Ile	Arg	Asn	Glu	Trp	Gly
1				5					10					15	

Cys	Arg	Cys	Asn	Asp	Ser	Ser	Asp
				20			

<210> 451

<211> 20

<212> PRT

<213> Yersinia pestis

<400> 451

Gly	Asp	Ile	Pro	Tyr	Leu	Gly	Ala	Leu	Phe	Arg	Arg	Lys	Ser	Glu	Leu
1				5					10					15	

Thr	Arg	Arg	Thr
			20

<210> 452

<211> 24

<212> PRT

<213> Influenza

<400> 452

Met	Ser	Leu	Leu	Thr	Glu	Val	Glu	Thr	Pro	Ile	Arg	Asn	Glu	Trp	Gly
1				5					10					15	

Cys	Arg	Cys	Asn	Asp	Ser	Ser	Asp
				20			

<210> 453

<211> 23

<212> PRT

<213> Influenza

<400> 453

Ser	Leu	Leu	Thr	Glu	Val	Glu	Thr	Pro	Ile	Arg	Asn	Glu	Trp	Gly	Cys
1				5					10					15	



Arg Cys Asn Asp Ser Ser Asp  
20

<210> 454  
<211> 24  
<212> PRT  
<213> Influenza

<400> 454

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly  
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp  
20

<210> 455  
<211> 23  
<212> PRT  
<213> Inlfuenza

<400> 455

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys  
1 5 10 15

Arg Cys Asn Asp Ser Ser Asp  
20